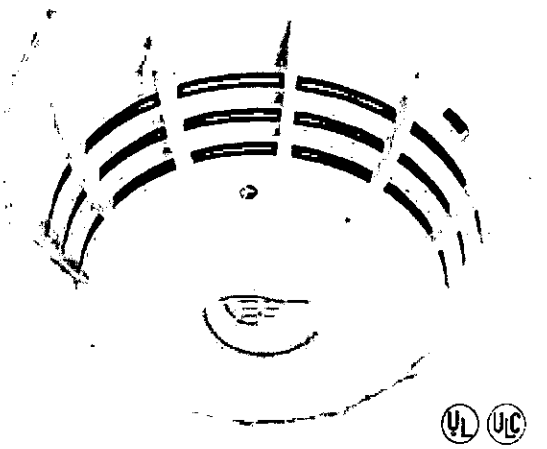
140 HUYSHOPE AVE
20141368

EST™
Life Safety & Communications

Intelligent Smoke Detector with Optional CO Sensor

SIGA2-PS, SIGA2-PCOS



Overview

Signature Series SIGA2-P(CO)S photoelectric detectors bring advanced sensing technology to a practical design that increases efficiency, saves installation time, cuts costs, and extends life safety and property protection capabilities. Continuous self-diagnostics ensure reliability over the long-haul, while innovative field-replacable smoke chambers make detector maintenance literally a snap. With its modular CO sensor, this detector pulls double-duty — continually monitoring the environment for signs of smoke, as well as its invisible yet deadly companion, carbon monoxide.

Like all Signature Series detectors, the SIGA2-P(CO)S is an intelligent device that gathers analog information from its smoke and CO sensor (if present), converting this data into digital signals. To make an alarm decision, the detector's on-board microprocessor measures and analyzes sensor readings and compares this information to historical data. Digital filters remove signal patterns that are not typical of fires, thus virtually eliminating unwanted alarms.

The SIGA2-PCOS includes an advanced carbon monoxide sensor and daughterboard. When the electrochemical cell reaches its end of life after approximately six years, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable.

Standard Features

- Optical smoke sensing technology with optional carbon monoxide sensor
- Field-replacable smoke chamber
- Field-replacable carbon monoxide sensor/daughterboard module
- Uses existing wiring
- Automatic device mapping
- Ground fault detection by module
- Up to 250 devices per loop
- Two levels of environmental compensation
- Two levels of dirty detector warning
- Twenty pre-alarm settings
- Five sensitivity settings
- Non-volatile memory
- Electronic addressing
- Environmental compensation
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases

DATA SHEET 85001-0619
Not to be used for [illegible] purposes. Issue 1

Application

Smoke detection
The SIGA2-PS detects extremely small particles of combustion and triggers an alarm at the first sign of smoke. Thanks to its high-performance forward scattering reflective response technology, the photoelectric smoke sensor responds quickly and reliably to a wide range of fire types, especially slow burning fires fuelled by combustibles typically found in modern multi-use buildings.

Carbon monoxide detection
CO detection has rapidly become a standard part of life safety strategies everywhere. Monitored CO detection is becoming mandated with increasing frequency in all types of commercial applications, but particularly in occupancies such as hotels, rooming houses, dormitories, day care facilities, schools, hospitals, assisted living facilities, and nursing homes. In fact, more than half of the U.S. population already lives in states requiring the installation of CO detectors in some commercial occupancies. This is because carbon monoxide is the leading cause of accidental poisoning deaths in America. Known as the "Silent Killer," CO is odorless, tasteless, and colorless. It claims nearly 500 lives, and results in more than 15,000 hospital visits annually.

Installation

Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inch or 4 inch octagon boxes, and to 4 inch square electrical boxes 1-1/2 inches (38 mm) deep. They mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. See mounting base installation and wiring for more information.

Testing & Maintenance

Each detector automatically identifies when it is dirty or defective and causes a "dirty detector" message. The detector's sensitivity measurement can also be transmitted to the loop controller. A sensitivity report can be printed to satisfy NFPA sensitivity measurements which must be conducted at the end of the first year and every two years thereafter.

The user-friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily from the control panel. Availability of maintenance features is dependent on the fire alarm system used. When the CO sensor's electrochemical cell reaches its end of life, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable. Scheduled maintenance (Regular or Selected) for proper detector operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72, NFPA 720, and ULC CAN/ULC 536 standards.

This detector will NOT sense fires that start in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

Sensing and reporting technology

The microprocessor in each detector provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log - Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory

Automatic Device Mapping - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. The mapping feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning etc.) in a different location from where it was originally.

Stand-alone Operation - A decentralized alarm decision by the detector is guaranteed. On-board intelligence permits the detector to operate in stand-alone mode. If loop controller CPU communications fail for more than four seconds, all devices on that circuit go into stand-alone mode. The circuit acts like a conventional alarm receiving circuit.

Fast Stable Communication - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

Accessories

Detector mounting bases have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3½ inch or 4 inch octagon boxes, 1½ inches (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. The SIGA-SB4, SIGA-RB4, and SIGA-IB4 mount to North American 4 inch sq. electrical boxes in addition to the above boxes. They include the SIGA-TS4 Trim Skirt which is used to cover the "mounting ears" on the base. The SIGA-AB4G mounts to a 4" square box only.

SIGA-AB4G/T Audible Base | SIGA-SB Standard Base | SIGA-IB Isolator Base | SIGA-RB Relay Base | SIGA-LED Remote LED

Remote LED SIGA-LED - The remote LED connects to the SIGA-SB or SIGA-SB4 Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

SIGA-TS4 Trim Skirt - Supplied with 4 inch bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

SIGA-AB4G and SIGA-AB4GT - These sounder bases are designed for use where localized or group alarm signaling is required. The SIGA-AB4G is compatible with Signature Series smoke and heat detectors. The SIGA-AB4GT sounder base, when used with the SIGA-TCDR Temporal Pattern Generator module, adds an audible output function to any Signature Series detector, including fire and CO detectors.

Typical Wiring

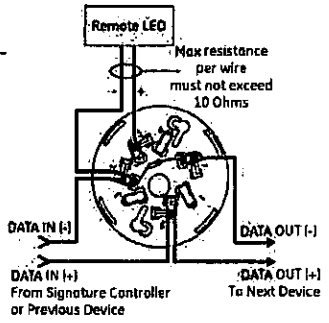
The detector mounting bases accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.5mm²), and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Standard Detector Base, SIGA-SB, SIGA-SB4

This is the basic mounting base for Edwards Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	Not Used
4	DATA IN (-)
5	Remote LED (-)
6	Remote LED (+)
7	Not Used
8	DATA OUT (-)



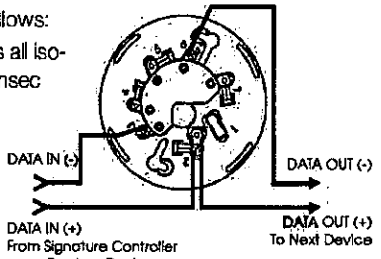
Isolator Detector Base, SIGA-IB, SIGA-IB4

This base includes a built-in line fault isolator for use on Class A circuits. A detector must be installed for it to operate. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows:

- a short on the line causes all isolators to open within 23 msec
- at 10 msec intervals, beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power
- when the isolator next to the short closes, reopens within 10 msec.

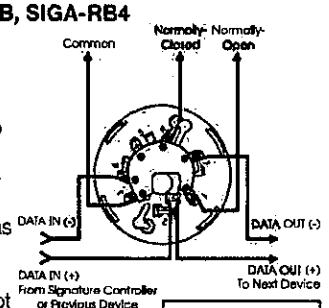
The process repeats beginning on the other side of the loop controller.



Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

Relay Detector Base, SIGA-RB, SIGA-RB4

This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The SIGA-RB can be operated as a control relay if programmed to do so at the control panel (EST3 V.2 only). The relay base does not support the SIGA-LED Remote LED.

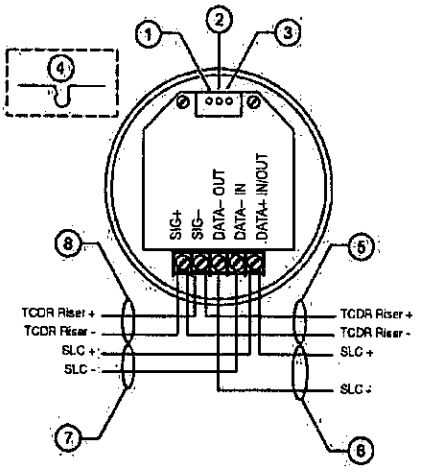


CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

Term	Description
1	Normally Open
2	DATA IN/OUT (+)
3	Common
4	DATA IN (-)
5	Not Used
6	Normally-Closed
7	DATA OUT (-)

Audible Detector Base for CO and Fire Detectors, SIGA-AB4GT

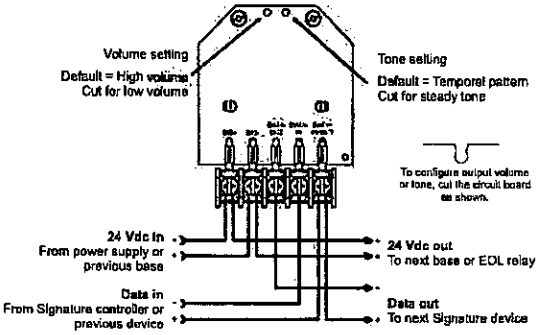
The Signature Series AB4GT sounder base, when used with the SIGA-TCDR Temporal Pattern Generator, adds an audible output function to any Signature Series detector. For more information on this device, refer to *Data Sheet 85001-0623 -- Sounder Base for CO and Fire Detectors*.



1. Volume setting. Default is high volume. For low volume, cut trace per item 4.
2. Reserved for future use. Do not cut.
3. Reserved for future use. Do not cut.
4. To configure output volume, cut trace as shown.
5. To next SIGA-AB4GT sounder base or EOL relay.
6. SLC_OUT to next intelligent addressable device.
7. SLC_IN from intelligent addressable controller or previous device.
8. From SIGA-TCDR Temporal Pattern Generator or previous SIGA-AB4GT sounder base.

Audible Detector Base, SIGA-AB4G

This base is designed for use where localized or group alarm signaling is required. When the detector senses an alarm condition, the audible base emits a local alarm signal. The optional SIGA-CRR Polarity Reversal Relay can be used for sounding to other audible bases on the same 24 Vdc circuit.



Relay and Audible Bases operate as follows:

- at system power-up or reset, the relay is de-energized
- when a detector is installed in the base with the power on, the relay energizes for four seconds, then de-energizes
- when a detector is removed from a base with the power on, the relay is de-energized
- when the detector enters the alarm state, the relay is energized.

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Compatibility

SIGA2-P(CO)S detectors are compatible only with the Signature Loop Controller.

Warnings & Cautions

This detector will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your fire protection specialist.

This detector will NOT sense fires that start in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

Specifications

	SIGA2-PS	SIGA2-PCOS
Normal operating current	45 µA	70 µA
Alarm current	18 mA	18 mA
Standalone alarm current	45 µA	70 µA
Operating voltage	15.20 to 19.95 VDC	
Air velocity	0 to 4,000 ft./min (0 to 20 m/s).	
Construction	High impact engineering polymer	
Wall mounting	Maximum 12 in (305 mm) from ceiling	
Mounting	Plug-in	
Shipping weight	0.44 lb. (164 g)	
Compatible bases	See Ordering Information	
Operating environment	32 to 120°F (0 to 49°C), 0 to 93% RH, noncondensing	
Storage temperature	–4 to 140°F (–20 to 60°C)	
Environmental compensation	Automatic	

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA2-PS	Intelligent Photoelectric Detector	0.4 (0.16)
SIGA2-PCOS	Intelligent Photoelectric Detector with carbon monoxide sensor	0.4 (0.16)
SIGA2-PCOS-CA	Intelligent Photoelectric Detector with carbon monoxide sensor (for use in Canadian markets only).	0.4 (0.16)

SIGA-SB	Detector Mounting Base - Standard	0.2 (.09)
SIGA-SB4	4-inch Detector Mounting Base c/w Trim Skirt	
SIGA-RB	Detector Mounting Base w/Relay	
SIGA-RB4	4-inch Detector Mounting Base w/Relay, c/w Trim Skirt	
SIGA-IB	Detector Mounting Base w/Fault Isolator	
SIGA-IB4	4-inch Detector Mounting Base w/ Fault Isolator, c/w Trim Skirt	
SIGA-LED	Remote Alarm LED (not for EN54 applications)	
SIGA-AB4G	Audible (Sounder) Base for Fire Detectors	0.3 (0.15)
SIGA-AB4GT	Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)
SIGA-TCDR	Temporal Pattern Generator	0.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)
2-SPRC1*	Replacement Smoke Chamber (for SIGA2-PS detectors)	0.1 (.04)
2-SPRC2*	Replacement Smoke Chamber (for SIGA2-PCOS detectors)	0.1 (.04)
2-CORPL*	Replacement CO Sensor	0.1 (.04)

*Release pending.

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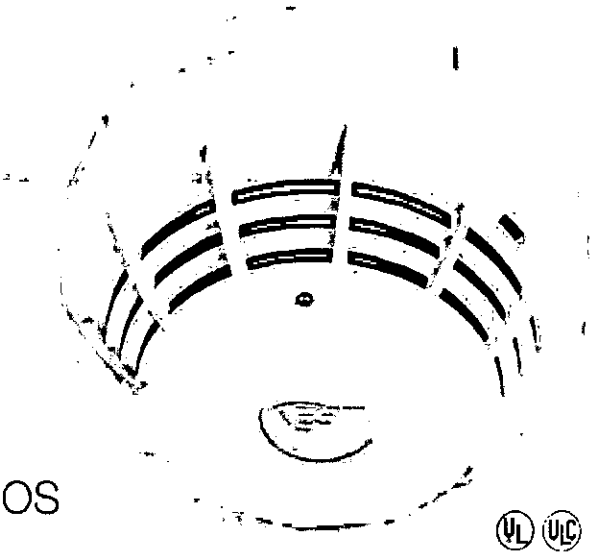
EST™
Life Safety & Communications

Intelligent Heat Detectors with Optional CO Sensors

SIGA2-HFS, SIGA2-HRS, SIGA2-HCOS



Overview

Signature Series fixed temperature and rate-of-rise heat detectors bring advanced sensing technology to a practical design that increases efficiency, saves installation time, cuts costs, and extends property protection capabilities. Continuous self-diagnostics ensure reliability over the long-haul, while the latest thermister technology makes these detectors ideal whereever dependable heat detection is required. With their modular CO sensor, these devices pull double-duty — continually monitoring the environment for heat from combustion, as well as its invisible yet deadly companion, carbon monoxide.

Like all Signature Series detectors, these are intelligent device that gather analog information from their heat and CO sensor (if present), converting this data into digital signals. To make an alarm decision, the detector's on-board microprocessor measures and analyzes sensor readings and compares this information to historical data. Digital filters remove signal patterns that are not typical of fires, thus virtually eliminating unwanted alarms.

The SIGA2-HCOS is a fixed temperature heat detector that includes an advanced carbon monoxide sensor and daughterboard. When the electrochemical cell reaches its end of life after approximately six years, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable.

Standard Features

Note: *Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.*

- Fixed temperature or rate-of-rise heat detection with optional carbon monoxide sensor
- Field-replacable carbon monoxide sensor/daughterboard module
- Uses existing wiring
- Automatic device mapping
- Ground fault detection by module
- Up to 250 devices per loop
- Non-volatile memory
- Electronic addressing
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases
- 50 foot (15.2 meter) spacing
- 15 °F (8 °C) per minute rate-of-rise alarm point (HRS)
- 135 °F (57 °C) fixed temperature alarm point (HFS/HCOS)

Application

Heat detection

SIGA2-HRS rate-of-rise heat detectors provide a 15 °F (9 °C) per minute rate-of-rise heat sensor for the detection of heat due to fire. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated.

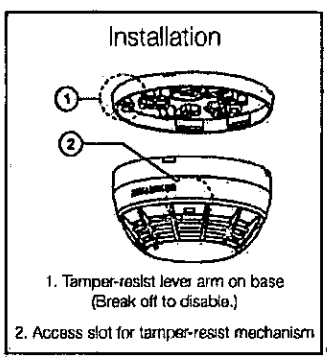
SIGA2-HFS and SIGA2-HCOS fixed temperature heat detectors provide a 135°F (57°C) fixed-temperature heat sensor for the detection of heat due to fire. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated.

Carbon monoxide detection

The SIGA2-HCOS includes a replaceable chemical cell for the detection of carbon monoxide (CO). CO detection has rapidly become a standard part of life safety strategies everywhere. Monitored CO detection is becoming mandated with increasing frequency in all types of commercial applications, but particularly in occupancies such as hotels, rooming houses, dormitories, day care facilities, schools, hospitals, assisted living facilities, and nursing homes. In fact, more than half of the U.S. population already lives in states requiring the installation of CO detectors in some commercial occupancies. This is because carbon monoxide is the leading cause of accidental poisoning deaths in America. Known as the "Silent Killer," CO is odorless, tasteless, and colorless. It claims nearly 500 lives, and results in more than 15,000 hospital visits annually.

Installation

Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inch or 4 inch octagon boxes, and to 4 inch square electrical boxes 1-1/2 inches (38 mm) deep. They mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. See mounting base installation and wiring for more information.



Testing & Maintenance

The user-friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily from the control panel. Availability of maintenance features is dependent on the fire alarm system used. When the CO sensor's electrochemical cell reaches its end of life, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable. Scheduled maintenance (Regular or Selected) for proper detector operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72, NFPA 720, and ULC CAN/ULC 536 standards.

Compatibility

SIGA2-PS detectors are compatible only with the Signature Loop Controller.

Sensing and reporting technology

The microprocessor in each detector provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log - Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory

Automatic Device Mapping - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. The mapping feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning etc.) in a different location from where it was originally.

Stand-alone Operation - A decentralized alarm decision by the detector is guaranteed. On-board intelligence permits the detector to operate in stand-alone mode. If loop controller CPU communications fail for more than four seconds, all devices on that circuit go into stand-alone mode. The circuit acts like a conventional alarm receiving circuit.

Fast Stable Communication - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

Accessories

Detector mounting bases have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3½ inch or 4 inch octagon boxes, 1½ inches (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. The SIGA-SB4, SIGA-RB4, and SIGA-IB4 mount to North American 4 inch sq. electrical boxes in addition to the above boxes. They include the SIGA-TS4 Trim Skirt which is used to cover the "mounting ears" on the base. The SIGA-AB4G mounts to a 4" square box only.

Remote LED SIGA-LED - The remote LED connects to the SIGA-SB or SIGA-SB4 Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

SIGA-TS4 Trim Skirt - Supplied with 4 inch bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

SIGA-AB4G and SIGA-AB4GT - These sounder bases are designed for use where localized or group alarm signaling is required. The SIGA-AB4G is compatible with Signature Series smoke and heat detectors. The SIGA-AB4GT sounder base, when used with the SIGA-TCDR Temporal Pattern Generator module, adds an audible output function to any Signature Series detector, including fire and CO detectors.

Typical Wiring

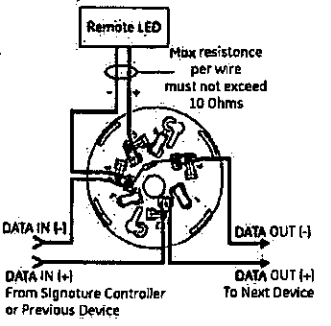
The detector mounting bases accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.5mm²), and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Standard Detector Base, SIGA-SB, SIGA-SB4

This is the basic mounting base for Edwards Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	Not Used
4	DATA IN (-)
5	Remote LED (-)
6	Remote LED (+)
7	Not Used
8	DATA OUT (-)



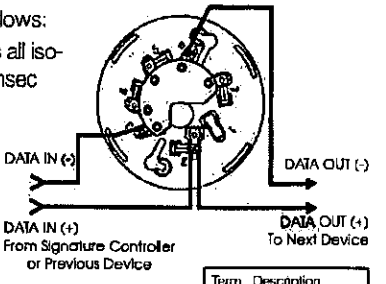
Isolator Detector Base, SIGA-IB, SIGA-IB4

This base includes a built-in line fault isolator for use on Class A circuits. A detector must be installed for it to operate. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows:

- a short on the line causes all isolators to open within 23 msec
- at 10 msec intervals, beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power
- when the isolator next to the short closes, reopens within 10 msec.

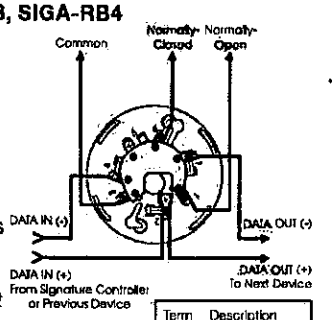
The process repeats beginning on the other side of the loop controller.



Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

Relay Detector Base, SIGA-RB, SIGA-RB4

This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The SIGA-RB can be operated as a control relay if programmed to do so at the control panel (EST3 V.2 only). The relay base does not support the SIGA-LED Remote LED.

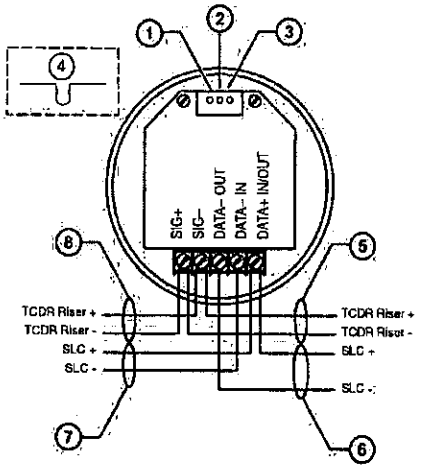


CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

Term	Description
1	Normally Open
2	DATA IN/OUT (+)
3	Common
4	DATA IN (-)
5	Not Used
6	Normally-Closed
7	DATA OUT (-)

Audible Detector Base for CO and Fire Detectors, SIGA-AB4GT

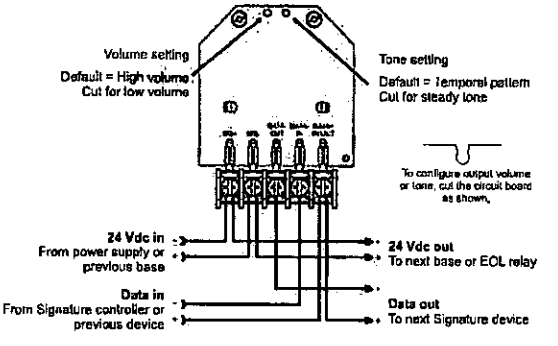
The Signature Series AB4GT sounder base, when used with the SIGA-TCDR Temporal Pattern Generator, adds an audible output function to any Signature Series detector. For more information on this device, refer to *Data Sheet 85001-0623 -- Sounder Base for CO and Fire Detectors*.



1. Volume setting. Default is high volume. For low volume, cut trace per item 4.
2. Reserved for future use. Do not cut.
3. Reserved for future use. Do not cut.
4. To configure output volume, cut trace as shown.
5. To next SIGA-AB4GT sounder base or EOL relay.
6. SLC_OUT to next intelligent addressable device.
7. SLC_IN from intelligent addressable controller or previous device.
8. From SIGA-TCDR Temporal Pattern Generator or previous SIGA-AB4GT sounder base.

Audible Detector Base, SIGA-AB4G

This base is designed for use where localized or group alarm signaling is required. When the detector senses an alarm condition, the audible base emits a local alarm signal. The optional SIGA-CRR Polarity Reversal Relay can be used for sounding to other audible bases on the same 24 Vdc circuit.



Relay and Audible Bases operate as follows:

- at system power-up or reset, the relay is de-energized
- when a detector is installed in the base with the power on, the relay energizes for four seconds, then de-energizes
- when a detector is removed from a base with the power on, the relay is de-energized
- when the detector enters the alarm state, the relay is energized.

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F 866 503 3996

Canada
Chubb Edwards
T 519 376 2430
F 519 376 7258

Southeast Asia
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F : +65 6391 9306

India
T : +91 80 4344 2000
F : +91 80 4344 2050

Australia
T +61 3 9239 1200
F +61 3 9239 1299

Europe
T +32 2 725 11 20
F +32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

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Warnings & Cautions

- This detector does not operate without electrical power. As fires frequently cause power interruption, discuss further safeguards with the local fire protection specialist.
- This detector does not sense fires in areas where heat cannot reach the detector. Heat from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector.
- This heat detector by itself does not provide life safety protection Use this detector with ionization and/or photoelectric smoke detectors.
- This detector does not detect oxygen levels, smoke, toxic gases, or flames. Use this device as part of a broad-based life safety program which includes a variety of information sources pertaining to heat and smoke levels, extinguishment systems, visual and audible devices, and other safety measures.
- Independent studies indicate that heat detectors should only be used when property protection alone is involved. Never rely on heat detectors as the sole means of fire protection.

Specifications

	SIGA2-HRS	SIGA2-HFS	SIGA2-HCOS
Normal operating current	45 µA	45 µA	45 µA
Standalone alarm current	18 mA	18 mA	18 mA
Alarm Current	45 µA	45 µA	45 µA
Actual alarm point	15°F (8°C)/min.	130 to 140°F (54 to 60°C)	
Operating voltage	15.20 to 19.95 VDC		
Maximum spacing	50 ft. (15.2 m) centers*		
Construction	High impact engineering polymer		
Mounting	Plug-in		
Shipping weight	0.44 lb. (164 g)		
Compatible bases	See Ordering Information		
Operating environment	32 °F to 100 °F (0 °C to 38 °C), 0 to 93% RH, noncondensing		
Storage temperature	– 4 °F to 140 °F (– 20 °C to 60 °C)		

*When replacing SIGA-HRS/HFS ensure spacing is 50ft or less.

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA2-HRS	Intelligent rate-of-rise heat detector	0.4 (0.16)
SIGA2-HFS	Intelligent fixed temperature heat detector	0.4 (0.16)
SIGA2-HCOS	Intelligent fixed temperature heat detector with CO sensor	0.4 (0.16)
SIGA2-HCOS-CA	Intelligent fixed temperature heat detector with CO sensor (for use in Canadian markets only)	0.4 (0.16)

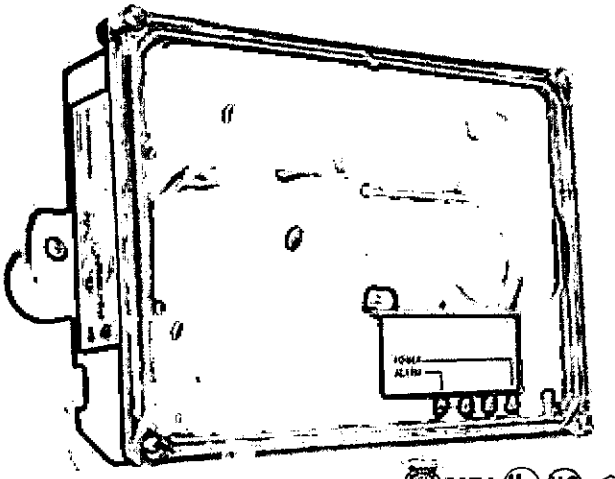
SIGA-SB	Detector Mounting Base - Standard	0.2 (.09)
SIGA-SB4	4-inch Detector Mounting Base c/w Trim Skirt	
SIGA-RB	Detector Mounting Base w/Relay	
SIGA-RB4	4-inch Detector Mounting Base w/Relay, c/w Trim Skirt	
SIGA-IB	Detector Mounting Base w/Fault Isolator	
SIGA-IB4	4-inch Detector Mounting Base w/ Fault Isolator, c/w Trim Skirt	
SIGA-LED	Remote Alarm LED (not for EN54 applications)	
SIGA-AB4G	Audible (Sounder) Base for Fire Detectors	0.3 (0.15)
SIGA-AB4GT	Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)
SIGA-TCDR	Temporal Pattern Generator	0.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)
2-CORPL*	Replacement CO Sensor	0.1 (.04)

*Release pending.

EST™
Life Safety & Communications

Intelligent Duct Smoke Detector

SIGA-SD



MEA UL ULC FM

Overview

The Edwards *SuperDuct* Signature Series smoke detector is the most advanced and most reliable device in its class. Designed for easy installation and superb reliability, *SuperDuct* represents the perfect balance of practical design and advanced technology.

***SuperDuct* detectors** feature a unique design that speeds installation and simplifies maintenance. Removable dust filters, conformally coated circuit boards, and optional water-resistant gaskets keep contaminants away from components, ensuring years of trouble-free service. When cleaning is required, the assemblies come apart easily and snap back together in seconds.

A Signature Series photoelectric sensor is incorporated into the design of each SIGA-SD duct smoke detector. This sensor inherits the power and benefits of this exceptional line of intelligent devices.

Signature Series sensors gather analog information from their smoke sensing elements and convert it into digital signals. The sensor measures and analyses these signals and compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires, which virtually eliminates unwanted alarms.

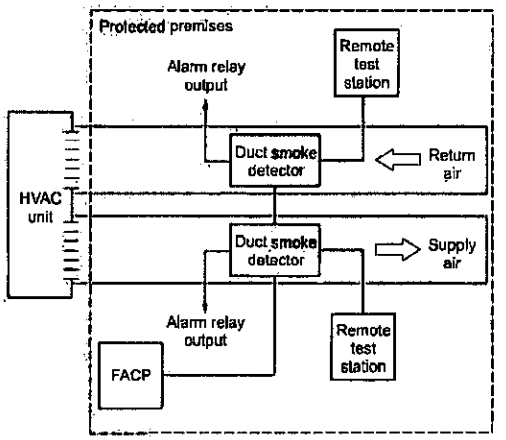
WARNING: Duct detectors have specific limitations. Duct detectors are not a substitute for an open area smoke detector. Duct detectors are not a substitute for early warning detection or a replacement for a building's regular fire detection system. Smoke detectors are not designed to detect toxic gases which can build up to hazardous levels in some fires. These devices will not operate without electrical power. As fires frequently cause power interruptions, Edwards suggests you discuss further safeguards with your local fire protection specialist.

Standard Features

- Less than 2" deep for easy installation and applications where space is tight
- -4°F to 158°F (-20°C to 70°C) operating range with 100 ft/min.. to 4,000 ft/min air velocity rating assures reliability under harsh environmental conditions
- Status LEDs remain visible through clear assembly cover
- Cover monitor switch for added security
- Standard sampling tube spacing for easy drop-in migration from other detectors
- Sampling tube can be installed with or without the cover in place and can be rotated in 45-degree increments to ensure proper alignment with duct airflow
- 15.2 to 19.95 Vdc operation
- Magnet-activated test switch
- One Form C auxiliary alarm relay for controlling ancillary equipment (e.g., HVAC controls)
- No special tools required for easy access to field connections
- Signature Series intelligence
- Environmental compensation with differential sensing for reliable, stable, and drift-free sensitivity
- Wide 0.79% to 2.46% obscuration/ft. smoke sensitivity
- Identification of dirty or defective detectors

Application

SuperDuct detectors are ideally suited to duct smoke detection applications where early indication of combustion is required within the confined space of ventilation ductwork. Its primary purpose is to provide early warning of an impending fire and to prevent smoke from circulating throughout the building. It is typically used to detect smoke in the supply side of the HVAC system but can provide supervision of the return side as well.



SuperDuct detectors continually sample air flow in the HVAC duct and initiate an alarm condition whenever smoke is detected. An alarm is activated when the quantity (percent obscuration) of combustion products in that air sample exceeds the detector's sensitivity setting.

Signature Series Intelligence

Like all Signature detectors, the SIGA-SD features electronic addressing and issues a dirty sensor warning when it reaches its preset limit. The dirty sensor warning indicates the sensor is operating within its specified limits but is in need of servicing. When the detector's ability to compensate for environmental changes has reached its limit, the duct smoke detector signals a trouble condition.

The SIGA-SD also uses differential sensing to prevent gradual environmental changes from triggering unwanted alarms. A rapid change in environmental conditions, such as smoke from a fire, causes the detector to signal an alarm state, but dust and debris accumulated over time does not change alarm sensitivity.

Each Signature Series SuperDuct detector contains a microprocessor that performs comprehensive self-diagnostics and stores the results in nonvolatile memory. Stored results include details such as hours of operation, last maintenance date, and number of alarms and troubles. This information can be retrieved and reviewed when desired.

Detector Configuration

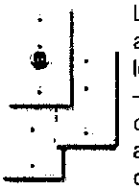
The detector assembly cover provides easy access to the smoke sensor, its wiring connections, sample and exhaust tubes, and the smoke chamber itself.

Air enters the detector's sensing chamber through a sampling tube (ordered separately) that extends into the duct and is directed back into the ventilation system through an exhaust tube (included). The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the detector initiates an alarm.

The sampling tube may be installed from either the duct side of the assembly or from inside the sensor compartment, as preferred by the installer. (The exhaust tube must be installed from the duct side.) Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted at virtually any angle relative to the air flow.

In installations where the duct smoke detector's controls and indicators are hidden from view, a remote test station or an LED indicator can be connected to the detector to provide these functions.

Remote Test Stations

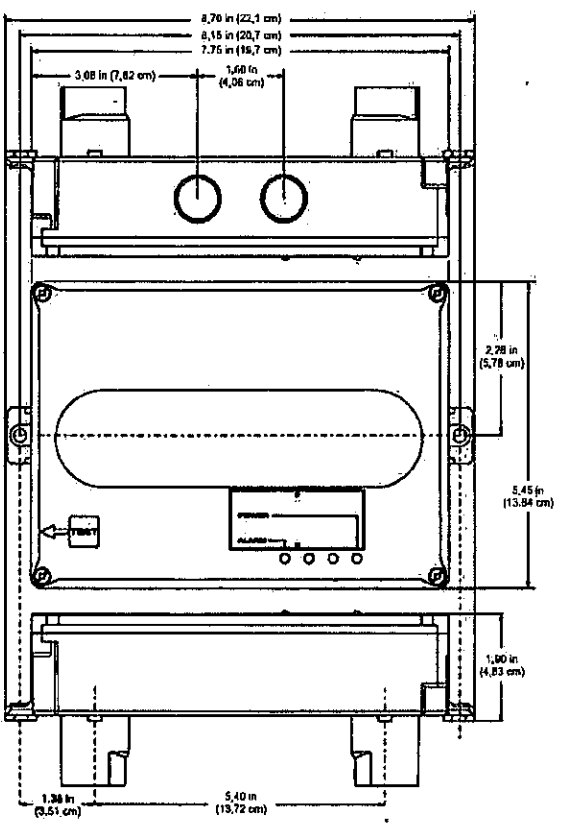


Labor-saving Remote Test/Reset stations provide alarm testing from the convenience of a remote location. Tests can be performed quickly and safely – without having to climb to the roof. Magnetically-operated and key-operated one-gang models are available. Signature SuperDuct detectors are also compatible with SIGA-LED remote alarm LED.

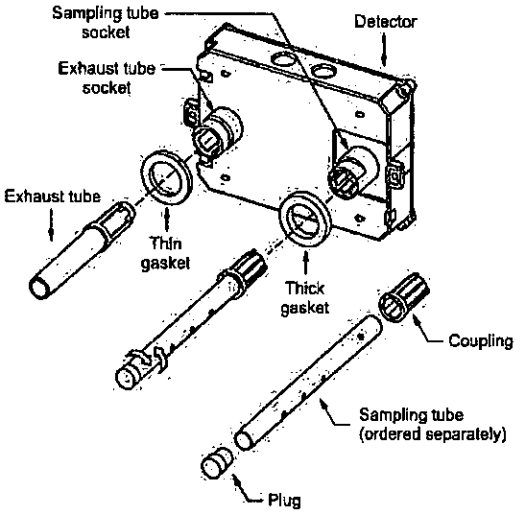
Air velocity in the duct as low as 100 ft/min. maintains adequate air flow into the sensor smoke chamber through air holes in the air sampling tube and discharges through the exhaust tube. *SuperDuct* air sampling tubes must be installed with the inlet holes facing the airstream. Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted in virtually any angle relative to the airflow.

SuperDuct sensors are engineered to operate optimally under the harsh environmental conditions frequently found in HVAC ductwork. Nonetheless, before installing the detector, test the duct air velocity, temperature, and humidity to verify that it is within the operating range of the *SuperDuct* detector. Consult the *SuperDuct* installation sheet for details.

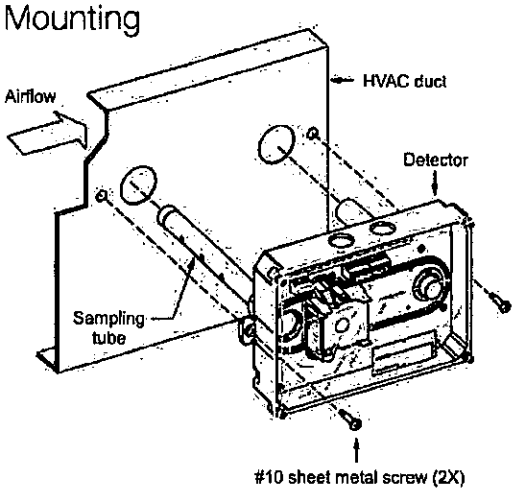
Dimensions



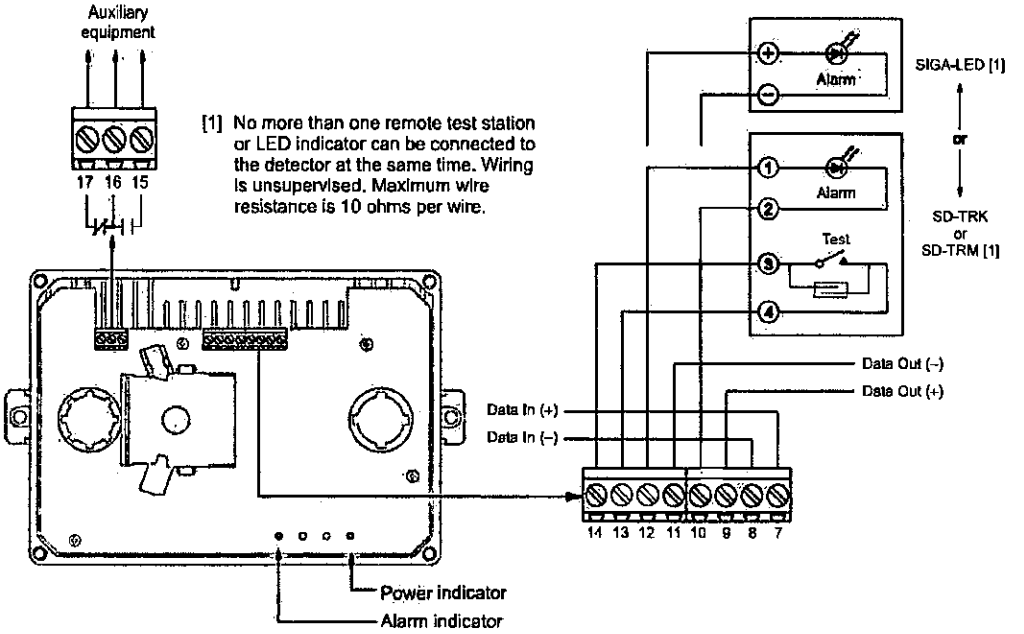
Assembly



Mounting

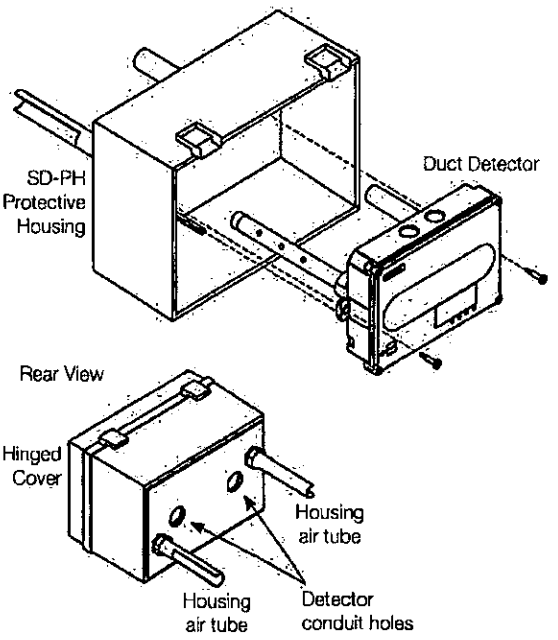


Wiring



High-humidity environments

Use the SD-PH Protective Housing when installing SuperDuct detectors in high-humidity environments. The SD-PH is a weatherized housing that prevents condensation on the device by insulating the detectors and providing circulated air from the monitored HVAC duct. The SD-PH also adds a layer of protection against physical damage to the unit.



The SD-PH is easy to install and service. The hinged and transparent cover provides ready access to the detector, while keeping its status indicators visible at all times.

Note: The SD-PH Protective Housing is weatherized against outdoor air, but it is not intended for direct outdoor exposure.

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Europe
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F +32 2 721 86 13

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Specifications, detector

Dimensions	8.70 x 5.45 x 1.90 inches (221 x 138 x 48 mm)
Wire size	14 to 22 AWG
Detection method	Photoelectric (light scattering principle)
Air velocity rating	100 to 4,000 ft/min and meets the required minimum air pressure differential
Air pressure differential	0.005 to 1.00 inches of water
Sensitivity	0.79 to 2.46 %/ft obscuration
Alarm test response time	5 seconds
LED indicators	Alarm (red), Power (green)
Common alarm relay	Unsupervised and power-limited Quantity: 1 Type: Form C Ratings: 2.0 A at 30 Vdc (resistive)
Operating voltage	15.2 to 19.95 Vdc
Operating current	Standby: 45 µA Alarm: 45 µA Inrush: 1 mA Standalone alarm: 18 mA
Operating environment	Temperature (UL): -4 to 158 °F (-29 to 70 °C). Temperature (ULC): -4 to 120 °F (-29 to 49 °C) Relative humidity: 10 to 93%, noncondensing
Agency listings	UL, ULC, CSFM, FM, MEA

Specifications, test stations

Remote Test/Reset Stations provide alarm test, trouble indication, and reset capability from a remote location. They include a one-gang plate, momentary SPST switch, red alarm LED, and terminal block. Magnetically-operated models (TRM) or key-operated models (TRK) are available.

Compatible electrical boxes	North American 1-gang box Standard 4-in square box, 1-1/2 inches deep, with 1-gang cover
LED indicators	Alarm (red)
LED type	Clear lens
Wire size	14 to 22 AWG
Resistance per wire	10 Ohms, max.
Current requirements	See controller specifications
LED circuit ratings	Voltage: 3 Vdc, max. Current: 30 mA, max.
Switch ratings (SD-TRK)	Voltage: 125 Vdc, max. Current: 4 A, max.
Switch ratings (SD-TRM)	Voltage: 200 Vdc, max. Current: 0.5 A, max.
Compatible detectors	SuperDuct conventional two-wire and Signature duct smoke detectors
Operating environment	-4°F to 158°F (-20°C to 70°C) Humidity: 93% RH, noncondensing
Storage temperature	-4 to 140 °F (-20 to 60 °C)
Agency listings	UL, ULC, MEA, CSFM

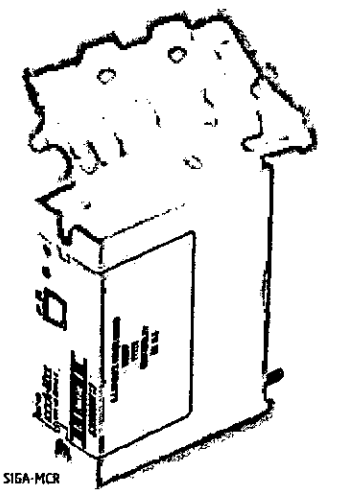
Ordering Information

Catalog Number	Description	Ship Wt., lb. (kg)
SIGA-SD	Intelligent SuperDuct Detector	2.4 (1.1)
Accessories		
SD-T8	8-inch sampling tube	0.5 (0.2)
SD-T18	18-inch sampling tube	1.5 (0.7)
SD-T24	24-inch sampling tube	2.7 (1.2)
SD-T36	36-inch sampling tube	3.0 (1.4)
SD-T42	42-inch sampling tube	3.5 (1.6)
SD-T60	60-inch sampling tube	5.8 (2.6)
SD-T78	78-inch sampling tube	7.5 (3.4)
SD-T120	120-inch sampling tube	11.5 (5.2)
SD-PH	Protective housing for high humidity environments	5.5 (2.5)
SIGA-LED	Remote alarm LED	1.0 (0.5)
SD-TRM	Remote test station, magnetic	1.0 (0.5)
SD-TRK	Remote test station, keyed	1.0 (0.5)
SD-VTK	Air velocity test kit (stoppers only, etc)	1.0 (0.5)
SD-GSK	Cover gasket kit	0.5 (0.2)
SD-MAG	Test magnet kit	0.5 (0.2)
SIGA-SDPCB	Replacement PCB/Signature sensor kit	1.0 (0.5)

EST™
Life Safety & Communications

Control Relay Modules

SIGA-CR, SIGA-MCR, SIGA-CRR, SIGA-MCRR



MEA

Overview

The Control Relay Module and the Polarity Reversal Relay Module are part of the Signature Series system. They are intelligent analog addressable devices available in either plug-in (UIO) versions, or standard 1-gang mount versions.

The SIGA-CR/MCR Control Relay Module provides a Form "C" dry relay contact to control external appliances such as door closers, fans, dampers etc. This device does not provide supervision of the state of the relay contact. Instead, the on-board microprocessor ensures that the relay is in the proper ON/OFF state. Upon command from the loop controller, the SIGA-CR/MCR relay activates the normally open or normally-closed contact.

The SIGA-CRR/MCRR Polarity Reversal Relay Module provides a Form "C" dry relay contact to power and activate a series of SIGA-AB4G Audible Sounder Bases. Upon command from the Signature loop controller, the SIGA-CRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.

Standard-mount versions (SIGA-CR and SIGA-CRR) are installed to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

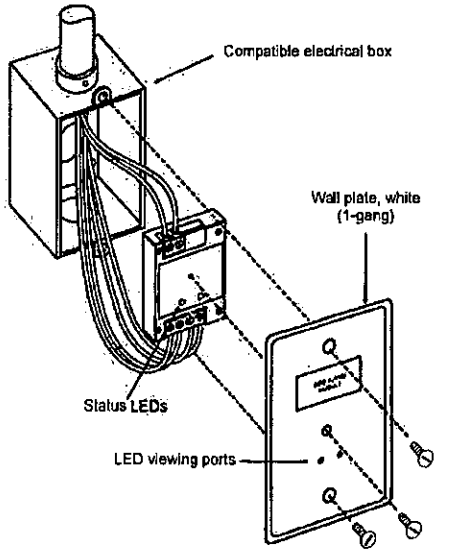
Plug-in UIO versions (SIGA-MCR and SIGA-MCRR) are part of the UIO family of plug-in Signature Series modules. They function identically to the standard mount versions, but take advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in Edwards enclosures.

Standard Features

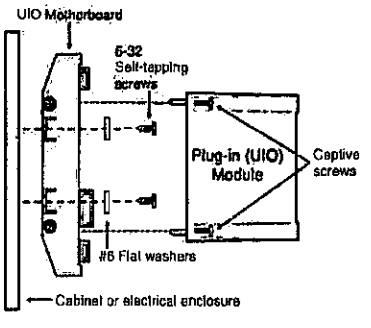
- **Provides one no/nc contact (SIGA-CR/MCR)**
  Form "C" dry relay contact can be used to control external appliances such as door closers, fans, dampers etc.
- **Allows group operation of sounder bases**
  The SIGA-CRR/MCRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool; there are no switches or dials to set.
- **Intelligent device with microprocessor**
  All decisions are made at the module to allow lower communication speed with substantially improved control panel response time and less sensitivity to line noise and loop wiring properties; twisted or shielded wire is not required.
- **Ground fault detection by address**
  Detects ground faults right down to the device level.

Installation

SIGA-CR and SIGA-CRR: modules mount to North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



SIGA-MCR and SIGA-MCRR: mount the UIO motherboard inside a suitable Edwards enclosure with screws and washers provided. Plug the module into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its onboard memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

Edwards recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The operation of Signature Series control relays is determined by their sub-type code or "Personality Code."

Personality Code 8: CONTROL RELAY (SIGA-CR/MCR) - Dry Contact Output. This setting configures the module to provide one Form "C" DRY RELAY CONTACT to control Door Closers, Fans, Dampers, etc. Contact rating is 2.0 amp @ 24 Vdc; 0.5 amp @ 120 Vac (or 220 Vac for non-UL applications). Personality Code 8 is assigned at the factory. No user configuration is required.

Personality Code 8: POLARITY REVERSAL RELAY MODULE (SIGA-CRR/MCRR). This setting configures the module to reverse the polarity of its 24 Vdc output. Contact rating is 2.0 amp @ 24 Vdc (pilot duty). Personality Code 8 is assigned at the factory. No user configuration is required.

Compatibility

The Signature Series modules are compatible only with EST's Signature Loop Controller.

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

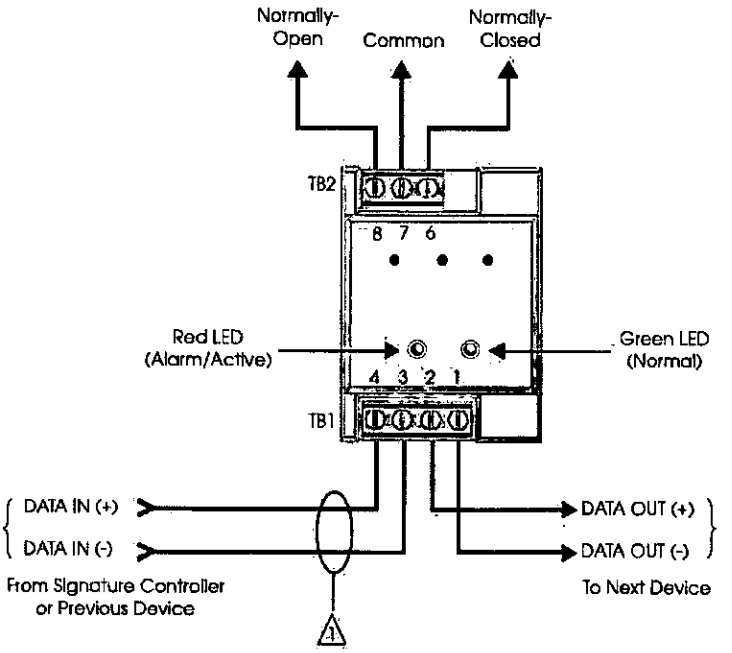
Testing & Maintenance

The module's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each module and other pertinent messages. Single modules may be turned off (deactivated) temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used. Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

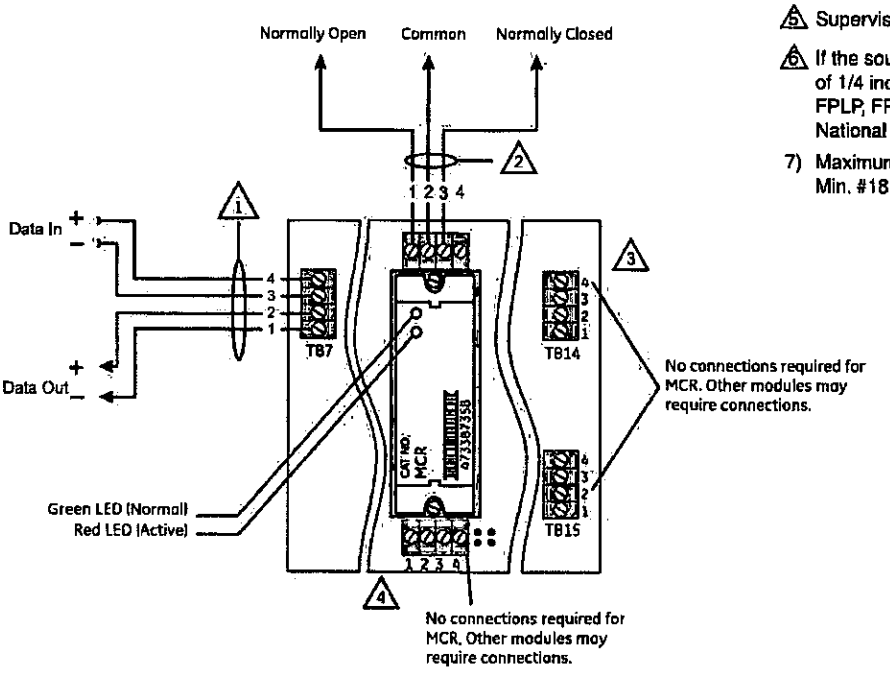
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



SIGA-CR Control Relay



SIGA-MCR Control Relay

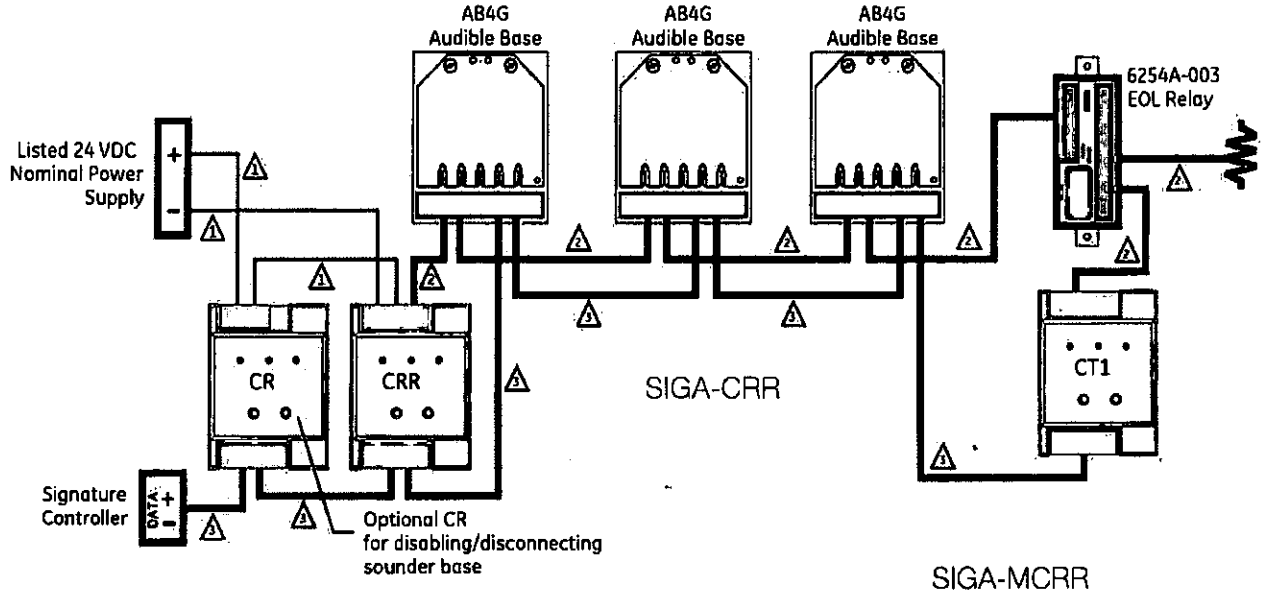
Notes

1. Refer to Signature Loop Controller Installation Sheet for wiring specifications.
2. NFPA 72 requires that the SIGA-CR/SIGA-MCR be installed in the same room as the device it is controlling. This requirement may not apply in all markets. Check with your local AHJ for details.
3. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
4. The SIGA-UIO6 does not come with TB8 through TB13.
5. Supervised and power-limited.
6. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
7) Maximum #12 AWG (2.5mm²) wire. Min. #18 (0.75mm²).

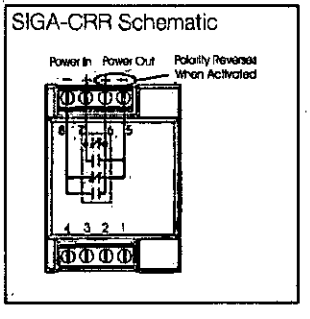
Typical Wiring

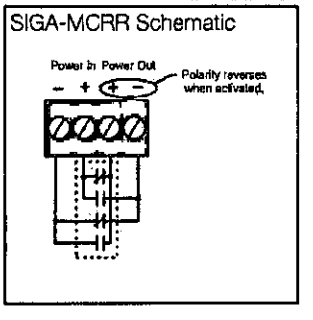
Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.50mm²) wire sizes.

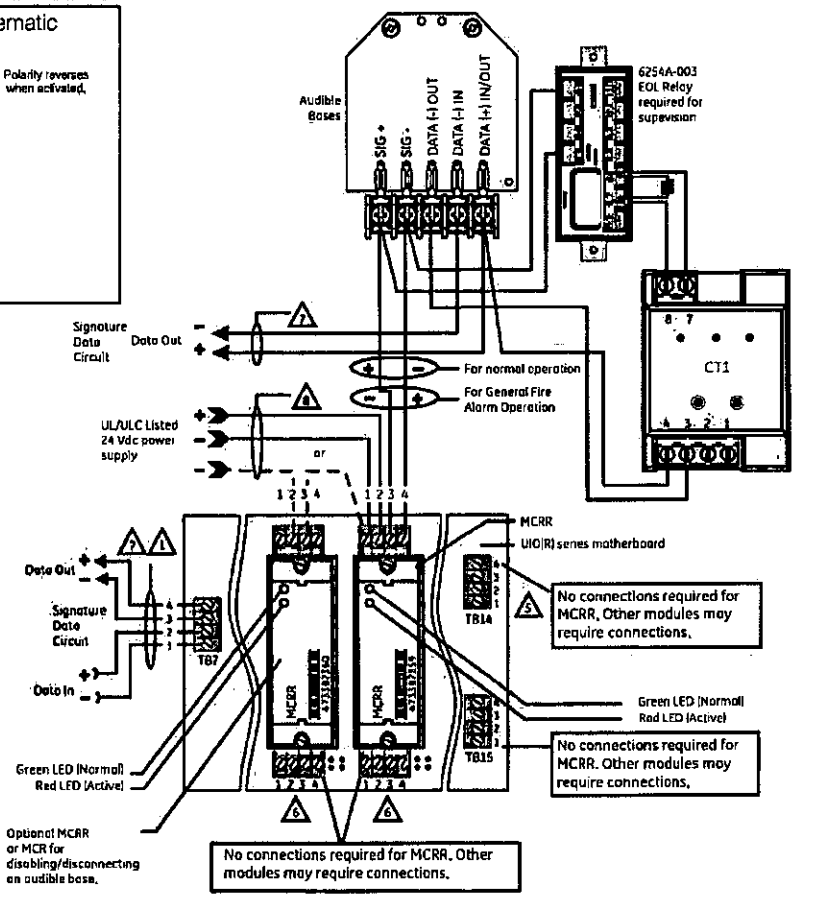
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



SIGA-MCRR







Notes

1. Refer to the Signature controller Installation sheet for wiring.
2. One Pair of Wires (24 Vdc power).
3. One Pair of Wires (Signature Data).
4. Single Wire (24 Vdc power).
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. The SIGA-UIO6 does not come with TB8 through TB13.
7. Supervised and power-limited.
8. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
9. Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm²).
10. End-of-Line Relay must monitor and report power supply trouble to control panel.
11. Class B Data wiring may be "T-tapped."

16

Specifications

Catalog Number	SIGA-CR	SIGA-MCR	SIGA-CRR	SIGA-MCRR
Description	Control Relay		Polarity Reversal Relay	
Type Code	Personality Code 8 (Factory Set)		Personality Code 8 (Factory Set)	
Address Requirements	Uses 1 Module Address			
Operating Current	Standby = 100µA Activated = 100µA			
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)			
Relay Type and Rating	Form "C" 24 VDC = 2 amps (pilot duty) 120 Vac = 0.5 amps 220 Vac (non-UL) = 0.5 amps			
Mounting	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards
Construction & Finish	High Impact Engineering Polymer			
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH			
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes when in alarm/active			
Compatibility	Use With: Signature Loop Controller			
Agency Listings	UL, ULC, CSFM, MEA			

Ordering Information

Catalog Number	Description	Ship Weight - lbs (kg)
SIGA-CR	Control Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCR	Control Relay Module (UIO Mount)	0.18 (0.08)
SIGA-CRR	Polarity Reversal Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCRR	Polarity Reversal Relay Module (UIO Mount)	0.18 (0.08)
Related Equipment		
27193-11	Surface Mount Box - Red, 1-gang	1 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs - Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs - Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board - Six Module Positions	0.56 (0.25)
SIGA-AB4G	Audible (Sounder) Detector Base	0.3 (0.15)
Accessories		
MFC-A	Multifunction Fire Cabinet - Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MB4	Transponder Mounting Bracket (allows for mounting two 1-gang modules in a 2-gang box)	0.4 (0.15)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

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Signature Series Overview

The Signature Series intelligent analog-addressable system from Edwards is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool. The information stored in device memory includes:

- Device serial number, address, and type
- Time and date of last alarm
- Most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of as-built drawings is fast and efficient.

Device mapping allows the Signature Data Controller to discover:

- Unexpected additional device addresses
- Missing device addresses
- Changes to the wiring in the circuit.

Most Signature modules use a personality code selected by the installer to determine their actual function. Personality codes are downloaded from the SDC during system configuration and are indicated during device mapping.

Standalone Operation – A decentralized alarm decision by the device is guaranteed. Onboard intelligence permits the device to operate in standalone (degrade) mode. If Signature loop controller CPU communications fail for more than four seconds, all devices on that circuit go into standalone mode. The circuit acts like a conventional alarm receiving circuit. Each Signature device on the circuit continues to collect and analyze information from its slave devices. When connected to a panel utilizing standalone operation, modules with their "personality" set as alarm devices (IDC) will alarm should their slave alarm-initiating device activate.

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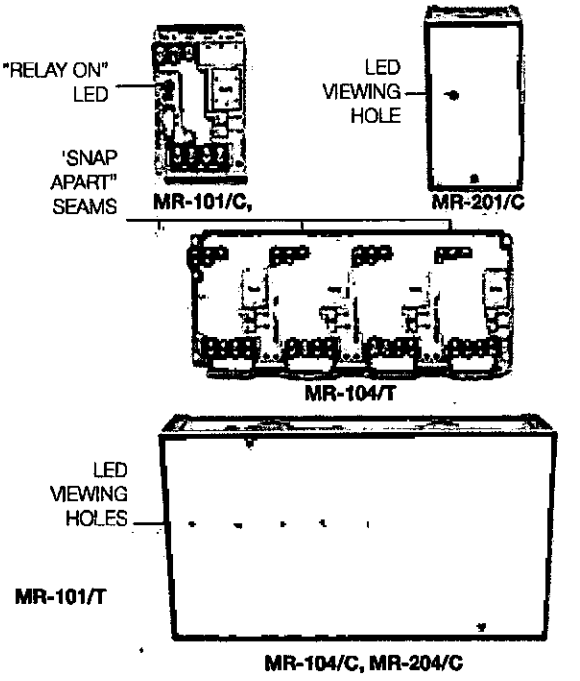
Multi-Voltage Control Relays

MR-100 & MR-200 Series



Overview

The MR-Series Multi-Voltage Control Relays offer SPDT or DPDT 10 Amp contacts which may be operated by one of four input control voltages. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac or 230 Vac by wiring to appropriate input terminals.

Each relay position contains a red light emitting diode (LED) which indicates the relay coil is energized. Relays may be "snapped apart" from a standard four-module assembly and used independently.

These devices are ideal for applications where local contacts are required for system status, remote contacts for control of electrical loads and general purpose switching. They are suitable for use with HVAC Temperature Control, Fire Alarm, Security, Energy Management, and Lighting Control Systems.

Standard Features

- Each relay position may be energized from one of four input voltages
- Each relay position contains a red LED which illuminates when the coil is energized. This provides a timesaving convenience when checking an installed system; no metering is required.
- Single, dual or triple relay modules may be "snapped apart" from a standard four-position master
- SPDT or DPDT relays available
- Available in dustproof metal enclosures with LED viewing port
- Track mounting hardware to facilitate installation in standard cabinets
- UL recognized relays rated at 10 million mechanical operations
- ULI listed as control unit accessory

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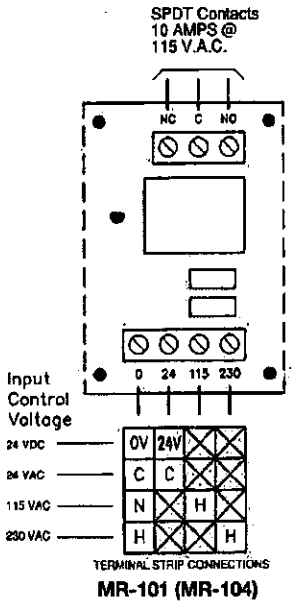
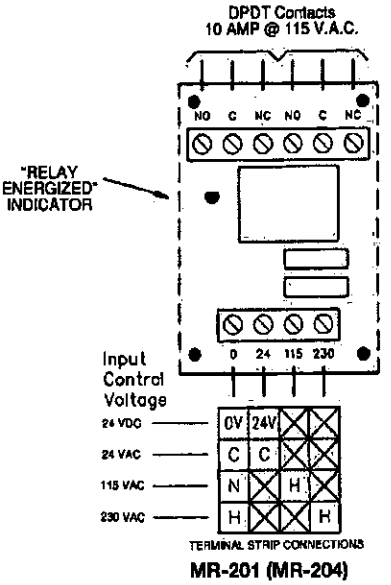
Installation Wiring

(TYPICAL FOR ONE MODULE POSITION)



MR-101 (MR-104)



MR-201 (MR-204)

Specifications

Power Requirements	
MR-101 Position	15 mA @ 24 Vac, 24 Vdc, 115 Vac, 230 Vac
MR-201 Position	35 mA @ 24 Vac, 24 Vdc, 115 Vac, 230 Vac
Relays	
MR-101	UL Recognized SPDT
MR-201	UL Recognized SPDT
Enclosure	18 ga. CRS, plated with 1/2 in conduit knockouts (top and bottom)
Contact Rating	10 Amps @ 115 Vac
Ambient Temperature	-58°F to 185°F (-50°C to 85°C)
Approvals	UL Listed control unit accessory
Dimensions	
MR-101/T and MR-201/T	3.0 H x 2.125 W x 1.5 D in (76 H x 54 W x 38 D mm)
MR-104/T and MR-204/T	3.0 H x 8.5 W x 1.5 D in (76 H x 216 W x 38 D mm)
MR-101/C and MR-201/C	6.125 H x 3.25 W x 2.5 D in (156mm H x 83mm W x 64 D mm)
MR-104/C and MR-204/C	6.125 H x 9.5 W x 2.5 D in (156 H x 241 W x 64 D mm)

Ordering Information

Model	Description
MR-101/T	Single SPDT relay with LED and track mounting hardware
MR-101/C	Single SPDT relay with LED mounted in metal enclosure
MR-104/T	Four-position SPDT relay with LEDs and track mounting hardware
MR-104/C	Four-position SPDT relay with LEDs mounted in metal enclosure
MR-201/T	Single DPDT relay with LED and track mounting hardware
MR-201/C	Single DPDT relay with LED mounted in metal enclosure
MR-204/T	Four-position DPDT realy with LEDs and track mounting hardware
MR-204/C	Four-position DPDT relay with LEDs mounted in metal enclosure

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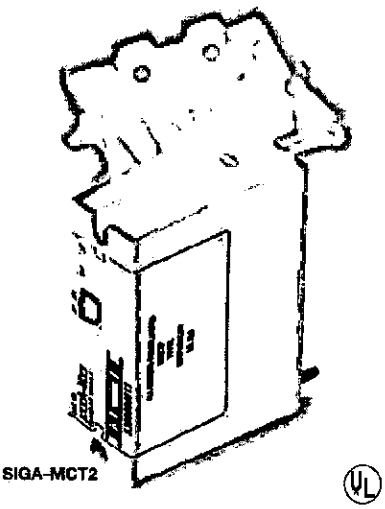
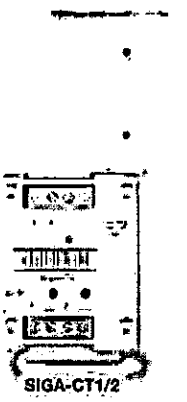
Input Modules

SIGA-CT1, SIGA-CT1HT, SIGA-CT2, SIGA-MCT2





MEA

Overview

The SIGA-CT1 Single Input Module, SIGA-CT1HT High Temperature Single Input Module and SIGA-CT2/SIGA-MCT2 Dual Input Modules are intelligent analog addressable devices used to connect one or two Class B normally-open Alarm, Supervisory, or Monitor type dry contact Initiating Device Circuits (IDC).

The actual function of these modules is determined by the "personality code" selected by the installer. This code is downloaded to the module from the Signature loop controller during system configuration.

The input modules gather analog information from the initiating devices connected to them and convert it into digital signals. The module's on-board microprocessor analyzes the signal and decides whether or not to input an alarm.

The SIGA-CT1, SIGA-CT1HT and SIGA-CT2 mount to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

The SIGA-CT1HT module operates at an expanded temperature range of 32 °F to 158 °F (0 °C to 70 °C) for those applications requiring more extreme environmental temperature variation.

The SIGA-MCT2 is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CT2, but takes advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in Edwards enclosures.

Standard Features

- **Multiple applications**
  Including Alarm, Alarm with delayed latching (retard) for waterflow applications, Supervisory, and Monitor. The installer selects one of four "personality codes" to be downloaded to the module through the loop controller.
- **SIGA-CT1HT rated for high temperature environments**
  Suitable for attic installation and monitoring high temperature heat detectors.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool. There are no switches or dials to set.
- **Stand-alone operation**
  The module makes decisions and inputs an alarm from initiating devices connected to it even if the loop controller's polling interrogation stops. (Function availability dependent upon control panel.)
- **Ground fault detection by address**
  Detects ground faults right down to the device level.

Signature Series Overview

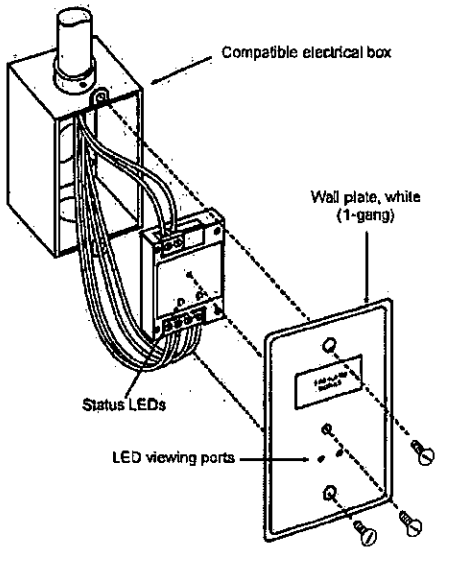
The Signature Series intelligent analog-addressable system from Edwards Security is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool.

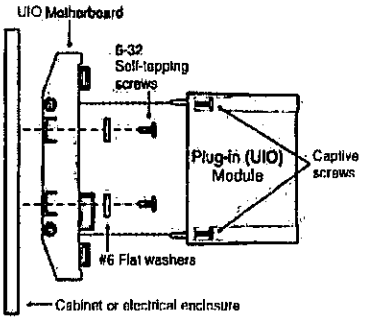
Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy.

Installation

SIGA-CT1, SIGA-CT1HT and SIGA-CT2: modules mount to North American 2½ inch(64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



SIGA-MCT2: mount the UIO motherboard inside a suitable Edwards enclosure with screws and washers provided. Plug the SIGA-MCT2 into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

Edwards recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The duty performed by the SIGA-CT1 and SIGA-CT2/MCT2 is determined by their sub-type code or "Personality Code". The code is selected by the installer depending upon the desired application and is downloaded from the loop controller.

One personality code can be assigned to the SIGA-CT1. Two personality codes can be assigned to the SIGA-CT2/MCT2. Codes 1, 2, 3 and 4 can be mixed on SIGA-CT2/MCT2 modules only. For example, personality code 1 can be assigned to the first address (circuit A) and code 4 can be assigned to the second address (circuit B).

NORMALLY-OPEN ALARM - LATCHING (Personality Code 1) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact initiating devices such as Pull Stations, Heat Detectors, etc. An ALARM signal is sent to the loop controller when the input contact is closed. The alarm condition is latched at the module.

NORMALLY-OPEN ALARM - DELAYED LATCHING (Personality Code 2) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact initiating devices such as Waterflow Alarm Switches. An ALARM signal is sent to the loop controller when the input contact is closed for approximately 16 seconds. The alarm condition is latched at the module.

NORMALLY-OPEN ACTIVE - NON-LATCHING (Personality Code 3) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact monitoring input such as from Fans, Dampers, Doors, etc. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is not latched at the module.

NORMALLY-OPEN ACTIVE - LATCHING (Personality Code 4) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact monitoring input such as from Supervisory and Tamper Switches. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is latched at the module.

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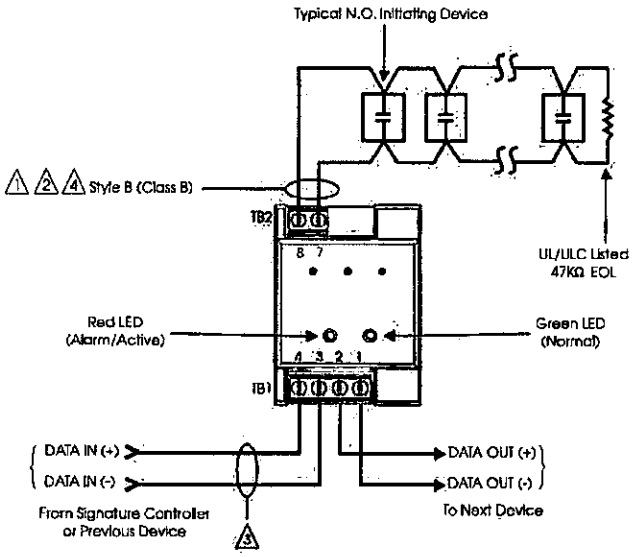
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), and #14AWG (1.50mm²), and #12 AWG (2.50mm²) wire sizes.

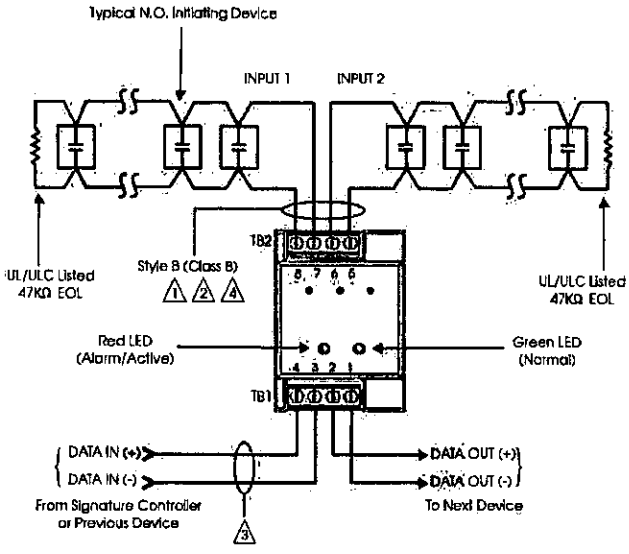
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Initiating (Slave) Device Circuit Wire Specifications

Maximum Allowable Wire Resistance	50 ohms (25 ohms per wire) per Circuit	
Maximum Allowable Wire Capacitance	0.1µF per Circuit	
For Design Reference:	**Wire Size**	**Maximum Distance to EOLR**
	#18 AWG (0.75 mm²)	4,000 ft (1,219 m)
	#16 AWG (1.00 mm²)	
	#14 AWG (1.50 mm²)	
	#12 AWG (1.50 mm²)	



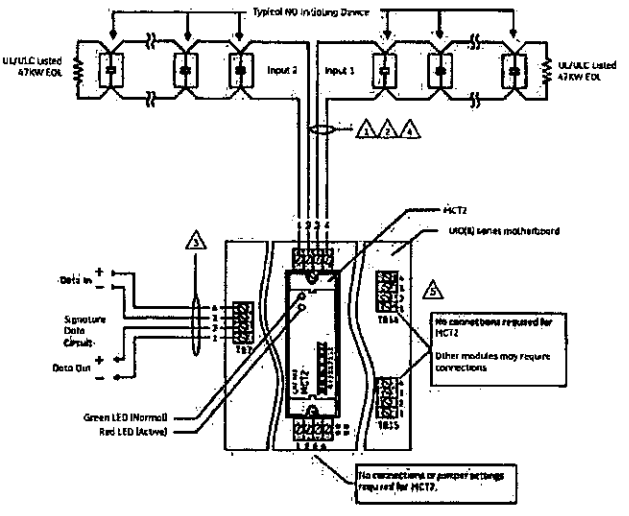
SIGA-CT1, SIGA-CT1HT



SIGA-CT2

NOTES

1. Maximum 25 Ohm resistance per wire.
2. Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm2).
3. Refer to Signature controller installation sheet for wiring specifications.
4. Maximum 10 Vdc @ 350 µA
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. All wiring is supervised and power-limited.
7. These modules will not support 2-wire smoke detectors.



SIGA-MCT2

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Compatibility

The Signature Series modules are compatible only with EST's Signature Loop Controller.

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Specifications

Catalog Number	SIGA-CT1HT	SIGA-CT1	SIGA-CT2	SIGA-MCT2
Description	Single Input Module		Dual Input Module	
Type Code	48 (factory set) Four sub-types (personality codes) are available		49 (factory set) Four sub-types (personality codes) are available	
Address Requirements	Uses One Module Address		Uses Two Module Addresses	
Operating Current	Standby = 250µA; Activated = 400µA		Standby = 396µA; Activated = 680µA	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)			
Construction	High Impact Engineering Polymer			
Mounting	North American 2½ inch (64 mm) deep one-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with one-gang covers and SIGA-MP mounting plates			UIO2R/6R/6 Motherboard
Operating Environment	32°F to 158°F (0°C to 70°C)	32°F to 120°F (0°C to 49°C)		
Storage Environment	-4°F to 140°F (-20°C to 60°C); Humidity: 0 to 93% RH			
LED Operation	On-board Green LED - Flashes when polled; On-board Red LED - Flashes when in alarm/active. Both LEDs - Glow steady when in alarm (stand-alone)			
Compatibility	Use with Signature Loop Controller			
Agency Listings	UL, ULC, MEA, CSFM			

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-CT1	Single Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-CT1HT	Single Input Module High Temperature Operation UL/ULC Listed	0.4 (0.15)
SIGA-CT2	Dual Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-MCT2	Dual Input Plug-in (UIO) Module — UL, ULC Listed	0.1 (0.05)

Related Equipment

27193-11	Surface Mount Box - Red, 1-gang	1.0 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1.0 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs — Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs — Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board — Six Module Positions	0.56 (0.25)
MFC-A	Multifunction Fire Cabinet — Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MB4	Transponder Mounting Bracket (allows for mounting two 1-gang modules in a 2-gang box)	0.4 (0.15)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

EST™
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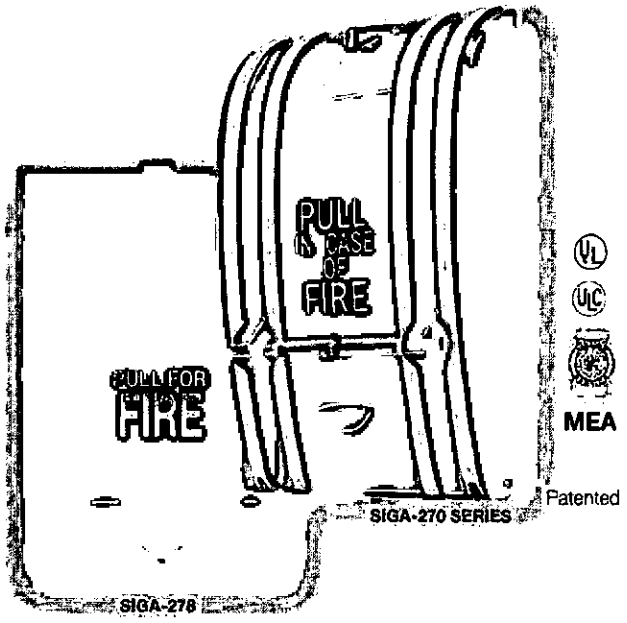
Manual Pull Stations

SIGA-270, SIGA-270P, SIGA-278



Overview

The SIGA-270 and SIGA-278 series Manual Pull Stations are part of EST's Signature Series system. The SIGA-270 Fire Alarm Manual Pull Stations feature our very familiar teardrop shape. They are made from die-cast zinc and finished with red epoxy powder-coat paint complemented by aluminum colored stripes and markings. With positive pull-lever operation, one pull on the station handle breaks the glass rod and turns in a positive alarm, ensuring protection plus fool-proof operation. Presignal models (SIGA-270P) are equipped with a general alarm (GA) keyswitch for applications where two stage operation is required. The up-front highly visible glass rod discourages tampering, but is not required for proper operation.

EST's double action single stage SIGA-278 station is a contemporary style manual station made from durable red colored lexan. To initiate an alarm, first lift the upper door marked "LIFT THEN PULL HANDLE", then pull the alarm handle.

Standard Features

Note: *Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.*

- **Traditional familiar appearance**
  SIGA-270 models feature our familiar teardrop design with simple positive pull action and sturdy die-cast metal body.
- **One stage (GA), two stage (pre-signal), and double action models**
  SIGA-270 models are available for one or two stage alarm systems. The single stage double action SIGA-278 features a rugged Lexan housing with keyed reset mechanism.
- **Break glass operation**
  An up-front visible glass rod on the SIGA-270 discourages tampering.
- **Intelligent device with integral microprocessor**
  All decisions are made at the station allowing lower communication speed while substantially improving control panel response time. Less sensitive to line noise and loop wiring properties; twisted or shielded wire is not required.
- **ADA Compliant**
  Meets ADA requirements for manual pull stations.
- **Electronic Addressing with Non-volatile memory**
  Permanently stores programmable address, serial number, type of device, and job number. Automatically updates historic information including hours of operation, last maintenance date, number of alarms and troubles, and time and date of last alarm.
- **Automatic device mapping**
  Each station transmits wiring information to the loop controller regarding its location with respect to other devices on the circuit.
- **Stand-alone operation**
  The station inputs an alarm even if the loop controller's polling interrogation stops.
- **Diagnostic LEDs**
  Status LEDs; flashing GREEN shows normal polling; flashing RED shows alarm state.
- **Designed for high ambient temperature operation**
  Install in ambient temperatures up to 120 °F (49 °C).

Application

The operating characteristics of the fire alarm stations are determined by their sub-type code or "Personality Code". NORMALLY-OPEN ALARM - LATCHING (Pesonality Code 1) is assigned by the factory; no user configuration is required. The device is configured for Class B IDC operation. An ALARM signal is sent to the loop controller when the station's pull lever is operated. The alarm condition is latched at the station.

Compatibility

Signature Series manual stations are compatible only with EST's Signature Loop Controller.

Warnings & Cautions

This device will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Testing & Maintenance

To test (or reset) the station simply open the station and operate the exposed switch. The SIGA-270 series are opened with a tool; the SIGA-278 requires the key which is supplied with that station.

The station's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each Signature series device and other pertinent messages. Single devices may be deactivated temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used.

Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Typical Wiring

The fire alarm station's terminal block accepts #18 AWG (0.75mm²) to #12 AWG (2.5mm²) wire sizes. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Wiring Notes

⚠ Refer to Signature Loop Controller manual for maximum wire distance.

2. All wiring is power limited and supervised.

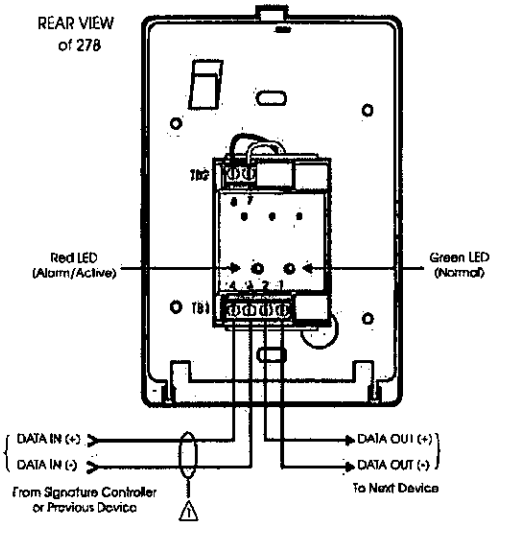


Figure 4. Single Stage Systems

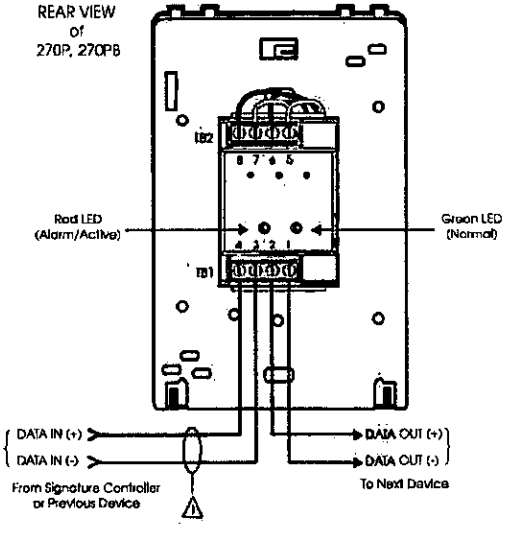


Figure 5. Two Stage Systems

Installation

Single-stage Signature Series fire alarm manual pull stations mount to North American 2½ inch (64 mm) deep 1-gang boxes.

Two stage presignal (270P) models require 1½ inch (38 mm) deep 4-inch square boxes with 1-gang, ½-inch raised covers. Openings must be angular. *Rounded openings are not acceptable.* Recommended box: Steel City Model 52-C-13; in Canada, use Iberville Model CI-52-C-49-1/2.

All models include terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size. Edwards recommends that these fire alarm stations be installed according to latest recognized edition of national and local fire alarm codes.

Electronic Addressing: The loop controller electronically addresses each manual station, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each station has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the stations can be addressed using the SIGA-PRO Signature Program/Service Tool.

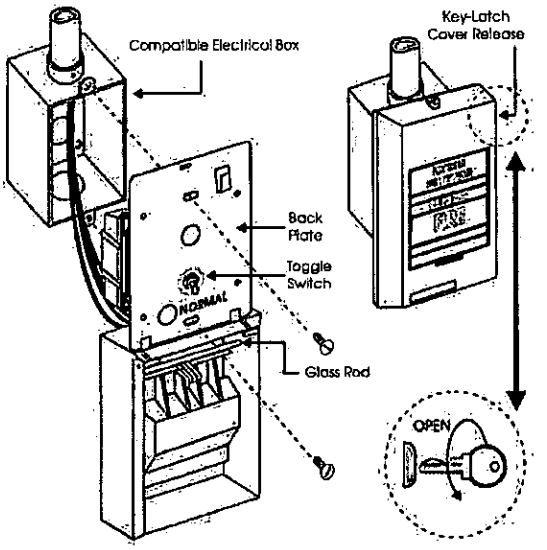


Figure 1. SIGA-278 installation

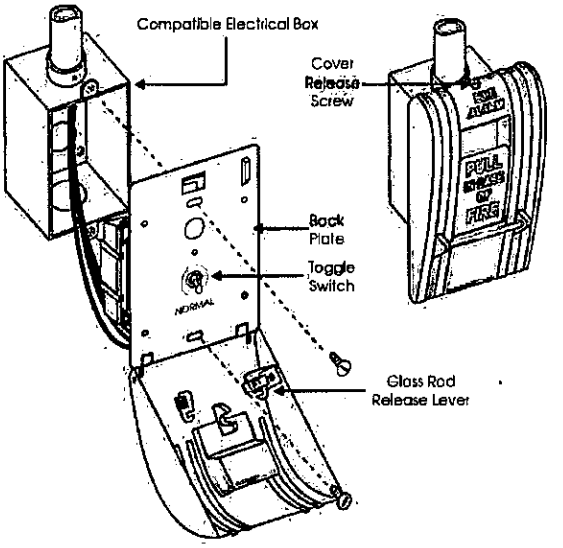


Figure 2. SIGA-270, SIGC-270F, SIGC-270B installation

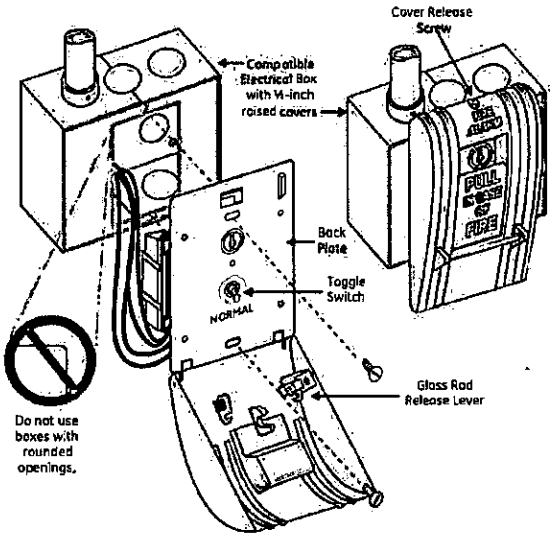


Figure 3. SIGA-270P, SIGC-270PB installation

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A UTC Fire & Security Company

Detection & alarm since 1872

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F : +91 80 4344 2050

Australia
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F +61 3 9239 1299

Europe
T +32 2 725 11 20
F +32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

utcfireandsecurity.com

Specifications

Catalog Number	SIGA-270, SIGC-270F, SIGC-270B	SIGA-270P, SIGC-270PB	SIGA-278
Description	Single Action - One Stage	Single Action -Two Stage (Presignal)	Double Action - One Stage
Addressing Requirements	Uses 1 Module Address	Uses 2 Module Addresses	Uses 1 Module Address
Operating Current	Standby = 250µA Activated = 400µA	Standby = 396µA Activated = 680µA	Standby = 250µA Activated = 400µA
Construction & Finish	Diecast Zinc - Red Epoxy with aluminum markings		Lexan - Red with white markings
Type Code	Factory Set		
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)		
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH		
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes w hen in alarm Both LEDs - Glow steady when in alarm (stand-alone)		
Compatibility	Use With: Signature Loop Controller		
Agency Listings	UL , ULC (note 1), MEA, CSFM		

Note: *SIGC-270F, SIGC-270B and SIGC-270PB are ULC listed only. Suffix "F" indicates French markings. Suffix "B" indicates English/French biling ual markings.*

Ordering Information

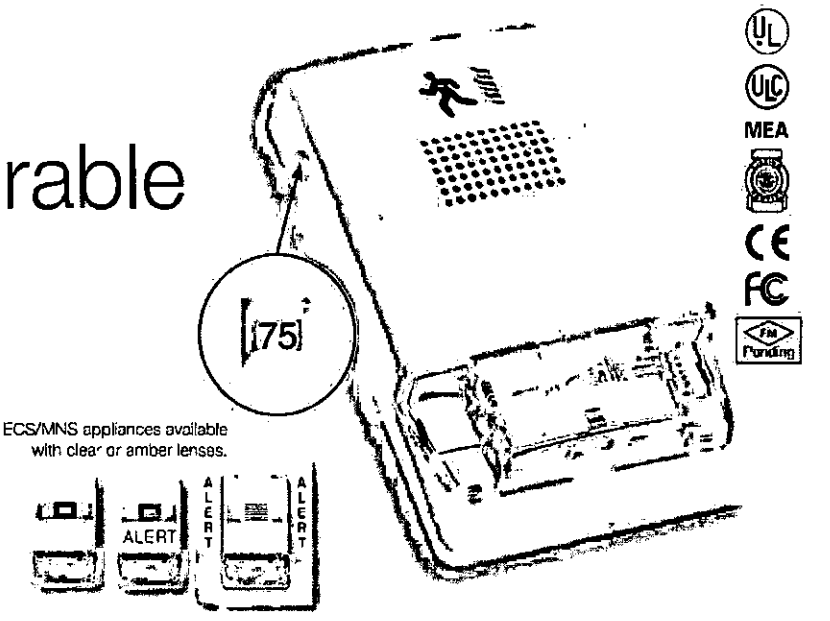
Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-270	One Stage Fire Alarm Station, English Markings - UL/ULC Listed	1 (0.5)
SIGC-270F	One Stage Fire Alarm Station, French Markings - ULC Listed	
SIGC-270B	One Stage Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-270P	Two Stage (Presignal) Fire Alarm Station, English Markings - UL/ULC Listed	
SIGC-270PB	Two Stage (Presignal) Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-278	Double Action (One Stage) Fire Alarm Station, English Markings - UL/ULC Listed	

Accessories		
32997	GA Key w/Tag - for pre-signal station (CANADA ONLY)	0.1 (.05)
276-K2	GA Key - for pre-signal station (USA ONLY)	
276-K1	Station Reset Key, Supplied with all Key Reset Stations	
27165	12 Glass Rods - for SIGA-270 series (CANADA ONLY)	
270-GLR	20 Glass Rods - for SIGA-270 series (USA ONLY)	
276-GLR	20 Glass Rods - for SIGA-278 series	
276B-RSB	Surface Mount Box, Red - for SIGA pull stations	1 (0.6)

EST™
Life Safety & Communications

Field Configurable Horns and Strobes

Genesis Series



Overview

The Genesis line of fire alarm and mass notification/emergency communications (ECS/MNS) signals are among the smallest, most compact audible-visible life safety signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, Edwards Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer selectable candela output by means of a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

Genesis ECS/MNS appliances offer emergency signaling with clear or amber lenses and with optional ALERT housing labels. They are ideal for applications that require differentiation between fire alarm and mass notification alerts.

Standard Features

- **Unique low-profile design**
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch
  - Attractive appearance
  - No visible mounting screws
- **Four field-configurable options in one device**
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- **Fixed 15/75 cd model available**
- **ECS/MNS models available**
- **Easy to install**
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- **Unparalleled performance**
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves sound penetration
  - Field-programmable temporal strobe output option

Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent sound penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB. Horn-only models may be ceiling-mounted or wall-mounted.

The suggested sound pressure level for each signaling zone used with alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

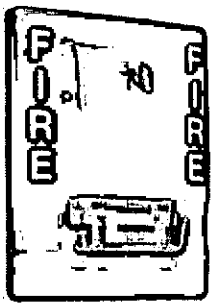
Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

ECS/MNS Applications

Genesis ECS/MNS strobe appliances bring the same high-performance fire alarm features and unobtrusive design to mass notification applications. Available with amber lenses and optional ALERT housing labels, they are ideal for applications that require differentiation between fire alarm and mass notification alerts.

Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.



Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

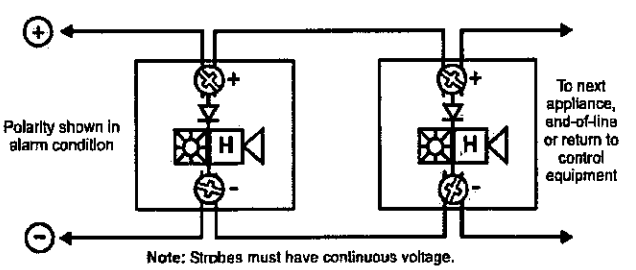
Genesis clear strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis clear strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	103	141	152	255	311
16 Vfwr	125	179	224	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	85	127	150	245	285
20 Vdc	71	98	123	188	240
24 Vdc	59	82	104	152	191
33 Vdc	46	64	84	112	137
16 Vfwr	119	169	223	332	376
20 Vfwr	103	143	189	253	331
24 Vfwr	94	129	169	218	262
33 Vfwr	87	112	148	179	205

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	102	135	160	246	309
20 Vdc	88	109	137	193	248
24 Vdc	81	94	122	161	203
33 Vdc	74	72	106	124	154
16 Vfwr	144	182	247	352	393
20 Vfwr	141	162	220	274	362
24 Vfwr	136	152	203	235	282
33 Vfwr	125	144	196	201	232

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd* RMS	30 cd* RMS	15/75 cd** RMS	75 cd* RMS	110 cd* RMS
16 Vdc	122	160	146	274	330
16 Vfwr	162	216	231	383	429

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd RMS	30 cd RMS	15/75 RMS	75 cd RMS	110 cd RMS
16 Vdc	96	130	158	243	302
20 Vdc	79	104	133	189	241
24 Vdc	68	88	119	156	197
33 Vdc	56	71	100	118	146
16 Vfwr	128	180	241	344	389
20 Vfwr	118	157	213	266	343
24 Vfwr	113	144	195	230	279
33 Vfwr	112	137	182	197	226

Horns

Wall or Ceiling Mounted Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB RMS	Low dB RMS
16 Vdc	22	17
20 Vdc	24	19
24 Vdc	27	22
33 Vdc	32	26
16 Vfwr	34	30
20 Vfwr	40	34
24 Vfwr	45	38
33 Vfwr	52	47

Wall or Ceiling Mounted Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS
24 Vdc	10
24 Vdc	11
31 Vdc	12
20 Vfwr	9
24 Vfwr	10

Current values are shown in mA.

dBA output

Temporal Horns, Horn-strobes (G1-HD, G1-HDVM series)

High dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	81.4	85.5	91.4	94.2
24 Vdc	84.4	88.6	94.5	97.6
33 Vdc	86.3	90.4	96.9	99.5

Low dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	76.0	80.1	86.3	89.2
24 Vdc	79.4	83.5	89.8	92.5
33 Vdc	82.1	86.5	92.5	95.3

Steady Tone Horns (G1-P series)

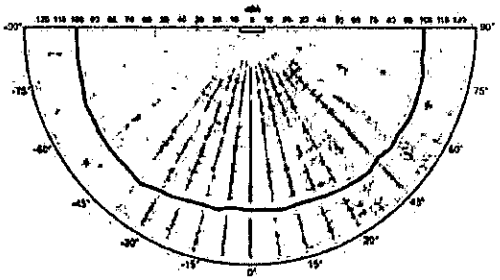
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

Notes

1. All values shown are dBA measured at 10 feet (3.01m).
2. UL464 values measured in reverberant room.
3. Average and Peak values are measured in anechoic chamber.

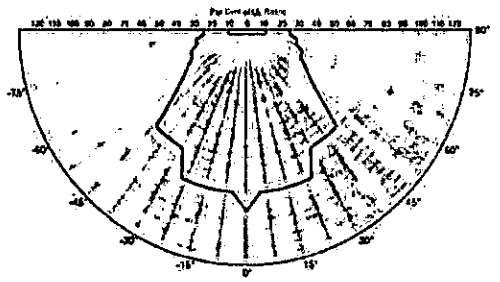
Average Sound Output (dBA)

(High dB setting, anechoic, 24V, measured at 10ft)



Light output - (effective cd)

Percent of UL rating versus angle



Specifications

Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Lens	Optical grade polycarbonate (clear)
Mounting (indoor only)	Strobes and horn-strobes are for wall-mount installation only. Horn-only models may be ceiling- or wall-mounted. Flush mount: 2½ inch (64 mm) deep one-gang box Surface mount: Model 27193 surface mount box, wiremold box, or equivalent surface-mount box With optional trim plate: One-gang, two-gang, four-inch square, octagonal, or European single-gang box
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	Indoor only: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	UL 1971, UL 1638, UL 464, ULC S525, ULC S526, CSFM, CE, FCC, MEA. (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)
Dimensions (HxWxD)	Signal: 4-1/2" x 2-3/4" x 13/16" (113 mm x 68 mm x 21 mm) Trimplate: 5" (127 mm); Height – 5-7/8" (149 mm); Depth – ½" (13 mm)
Operating voltage	G1-HD series temporal-tone horns: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded when horn set to steady tone) G1-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master) G1-VM series strobes: non-coded, filtered 16 - 33 Vdc or unfiltered 16-33 Vdc FWR G1-P series steady-tone horns: coded or non-coded, filtered 20-31 Vdc or unfiltered 20-27 Vfwr
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe flash rate	G1-VM strobes and G1-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds. Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Synchronization Sources	SIGA-CC1S, SIGA-MCC1S, SIGA-CC2A, SIGA-MCC2A, G1M-RM BPS6A, BPS10A, APS6A, APS10A, IO64, IO500, Fireshield Plus 3, 5 and 10 zone. Add G1M for G1-CVM &G1-HDVM devices only.
Horn pulse rate	G1-HD temporal-tone horns and G1-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds. G1-P steady-tone horns: continuous, steady tone only
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

Candela Output

Lens Color	Rating	Switch Position A	Switch Position B	Switch Position C	Switch Position D
Amber	UL 1638	110 cd	75 cd	30 cd	15 cd
Amber	UL 1971*	88 cd	60 cd	24 cd	12 cd
Clear	UL 1971	110 cd	75 cd	30 cd	15 cd

* *Equivalent Rating*

Fire appliances available with white or red housings.

ECS/MNS appliances available with clear or amber lenses.

Ordering Information

Model	Housing	Marking	Lens	Strobe	Horn	Ship Wt. lbs (kg)
Fire Alarm Appliances (c/w running man icon screen printed on housing)						
G1-VM	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1F-HD	White	FIRE	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1F-HDV1575	White	FIRE	Clear	15/75 cd[1]	Temporal hi/lo dB-24V	0.25 (0.11)
G1F-HDVM	White	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1F-P	White	FIRE	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1F-V1575	White	FIRE	Clear	15/75 cd[1]	Strobe only	0.25 (0.11)
G1F-VM	White	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1-HD	White	None	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1-HDVM	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1-P	White	None	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1RF-HD	Red	FIRE	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1RF-HDV1575	Red	FIRE	Clear	15/75 cd[1]	Temporal hi/lo dB-24V	0.25 (0.11)
G1RF-HDVM	Red	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1RF-P	Red	FIRE	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1RF-V1575	Red	FIRE	Clear	15/75 cd[1]	Strobe only	0.25 (0.11)
G1RF-VM	Red	FIRE	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1R-HD	Red	None	Clear	Horn only	Selectable high/low dB	0.25 (0.11)
G1R-HDVM	Red	None	Clear	Selectable 15, 30, 75, or 110 cd	Selectable high/low dB	0.25 (0.11)
G1R-P	Red	None	Clear	Steady Horn (not compatible with Genesis Signal Master)		0.25 (0.11)
G1R-VM	Red	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
ECS/MNS Appliances (no running man icon on housing)						
G1WA-VMA	White	ALERT	Amber	Selectable A, B, C or D	Strobe only	0.25 (0.11)
G1WA-VMC	White	ALERT	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
G1WN-VMA	White	None	Amber	Selectable A, B, C or D	Strobe only	0.25 (0.11)
G1WN-VMC	White	None	Clear	Selectable 15, 30, 75, or 110 cd	Strobe only	0.25 (0.11)
Trim Plates						
G1T	White	None	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1RT	Red	None	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1T-FIRE	White	FIRE	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1RT-FIRE	Red	FIRE	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
G1WT-ALERT	White	ALERT	Genesis Trim Plate (for two-gang or 4" square boxes)			0.15 (0.7)
Surface Boxes						
27193-16	White	N/A	One-gang surface mount box			1 (0.4)
27193-11	Red	N/A	One-gang surface mount box			1 (0.4)

[1] These 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638.

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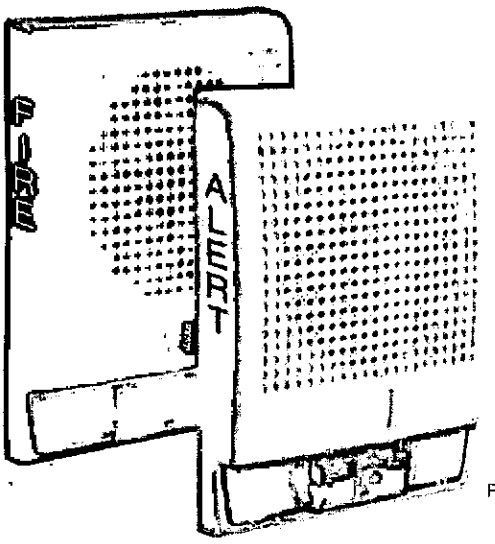
Genesis Speakers and Strobes

Genesis G4 Series



UL
ULC
MEA
CE
FC
FM
PENDING

Patents pending

Overview

The Genesis line of life safety and mass notification/emergency communications (ECS/MNS) signals are the smallest, most compact audible-visible emergency signaling devices in the world. Protruding no more than one inch from the wall, Genesis speakers and speaker-strobes blend with any decor.

Life safety appliances feature textured housings in architecturally neutral white or traditional life safety red.

ECS/MNS appliances offer emergency signaling with clear or amber lenses, white housings, and optional ALERT housing labels. They are ideal for applications that require differentiation between life safety and mass notification signals.

Thanks to patented breakthrough technology, Genesis strobes do not require bulky specular reflectors. Instead, an exclusive design channels and conditions light to produce a highly controllable distribution pattern.

Speaker-strobes feature selectable candela output with a conveniently-located switch on the bottom of the device. The candela setting remains clearly visible even after final installation.

All Genesis speakers include a DC blocking capacitor to allow electrical supervision of the audio distribution circuit. The speaker with its sealed back construction provides extra durability and improved audibility.

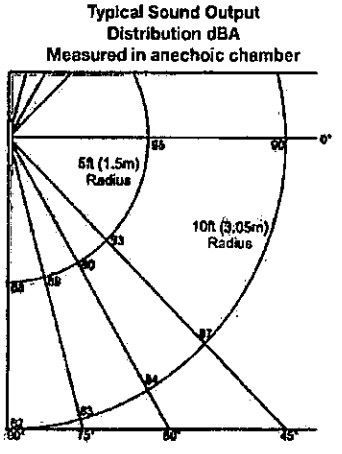
Standard Features

- **Unique low-profile design**
  - The most compact UL/ULC listed speaker-strobe available
  - Ultra-slim, protrudes a mere one inch from the wall
  - Attractive appearance, no visible mounting screws
- **Field configurable – no need to remove the device!**
  - ¼, ½, 1, or 2 watt operation and selectable candela output with convenient switches that remain visible even after the unit is installed
- **ECS/MNS models available**
- **Unparalleled performance**
  - loud 90 dBA output ensures clear, crisp audio
  - Exclusive FullLight strobe technology produces the industry's most even light distribution
  - Precision timing electronics meet tough new synchronizing standards for strobes when used with compatible modules
  - Optional field-configurable temporal strobe output
  - 25 Vrms and 70 Vrms models available, all supplied with a DC blocking capacitor for audio circuit supervision
- **Easy to install**
  - Fits all standard 4" square electrical boxes with plenty of room behind the signal for extra wire – no extension ring or trim plate needed
  - #18 - #12 AWG terminals – ideal for long runs or using existing wiring

Speaker Application

The suggested sound pressure level for each signaling zone used with alert or alarm signals is a minimum of 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater. This is measured 5 feet (1.5 m) above the floor.

Doubling the distance from the signal to the ear will theoretically cause a 6dB reduction in the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. Doubling the power output of a device (e.g.: a speaker from 1W to 2W) will increase the sound pressure level by 3dBA.



Genesis Series Cone Speaker/strobe

Strobe Application

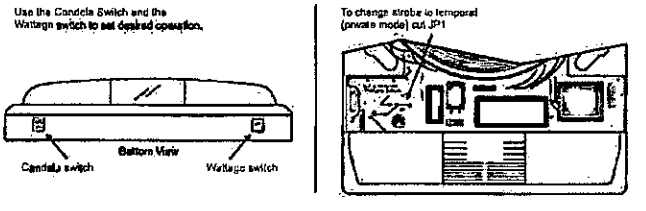
Genesis clear-lensed strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. UL 1638-listed colored-lensed strobe lights are available for ECS/MNS applications. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes meet UL synchronization requirements (within 10 milliseconds over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

Field Configuration

Genesis speakers may be set for ¼, ½, 1, or 2 watt operation. The wattage setting is visible through a small window on the bottom of the device and is changed by simply sliding the switch until the desired setting appears in the window. The speaker does not have to be removed to change the wattage.

Genesis speaker-strobes feature selectable candela output. The output setting is visible through a small window on the bottom of the device and is changed by simply sliding the switch until the desired setting appears in the window. The speaker-strobe does not have to be removed to change the output.

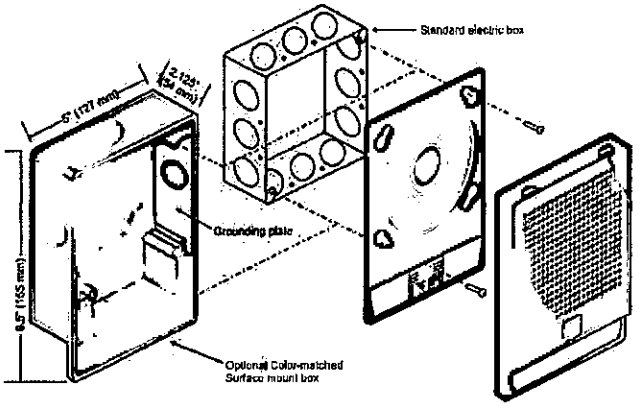


Genesis speaker-strobes may also be configured for temporal flash. This battery-saving feature is intended for private mode signaling only. To set the device for temporal flash, snip the circuit board as shown in the Jumper Locations diagram above.

Installation and Mounting

All models are intended for indoor wall mounted applications only. Speakers and speaker-strobes are flush mounted to a North-American 4" square electrical box, 2⅛" (54 mm) deep or a European 100 mm square box. Signals may be surface mounted to a Genesis surface-mount box (see ordering information for details).

Two tabs at the top of the signal unlock the cover to facilitate mounting. The shallow depth of Genesis devices leaves room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

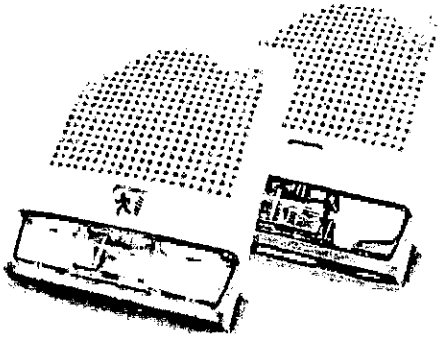


Edwards recommends that these speaker-strobes always be installed in accordance with the latest recognized edition of national and local codes. Refer to installation sheet for mounting height information.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, we suggest you discuss further safeguards with your local fire protection specialist.

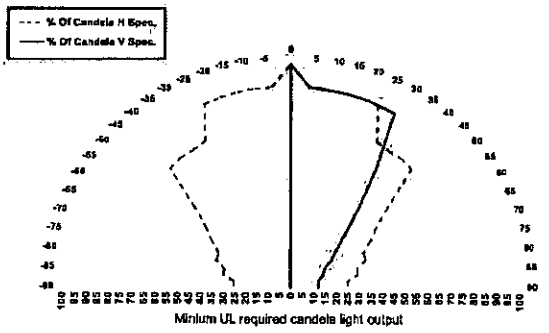
ECS/MNS Applications

Genesis ECS/MNS appliances bring the same high-performance life safety features and unobtrusive design to mass notification applications. Standard models are available with clear or amber lenses and optional ALERT housing labels, they are ideal for applications that require differentiation between life safety and mass notification alerts. Appliances with red, green or blue lenses are available. Contact Edwards Customer Service for details.



Light output

Per cent of UL rating versus angle



UL name plate maximum operating current (RMS-mA)

Cd rating	"15" or "A"	"30" or "B"	"75" or "C"	"110" or "D"
16 Vdc	96	130	239	294
16 Vfwr	120	169	329	375

Typical current, milliamps - average (RMS)

Cd rating	"15" or "A"	"30" or "B"	"75" or "C"	"110" or "D"
20 Vdc	65 (78)	93 (101)	182 (188)	238 (245)
24 Vdc	55 (65)	78 (86)	153 (159)	196 (203)
31 Vdc	45 (53)	63 (69)	120 (124)	151 (157)
20 Vfwr	56 (106)	79 (147)	147 (264)	197 (342)
24 Vfwr	50 (95)	68 (130)	121 (225)	155 (283)
27 Vfwr	44 (84)	60 (115)	107 (200)	137 (251)

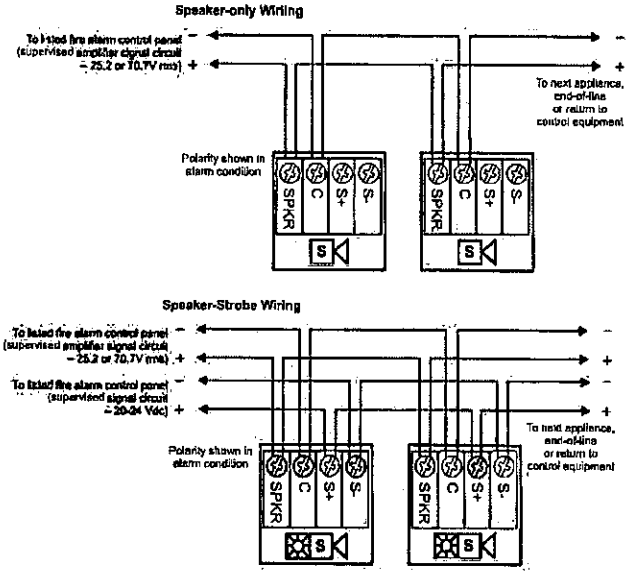
Light output switch settings for UL 1971 listed models are selectable by numeric candela value. ECS/MNS appliances are selectable by A, B, C, or D designations.

Lens Color	Rating	Switch Position A	Switch Position B	Switch Position C	Switch Position D
Amber	UL 1638	110 cd	75 cd	30 cd	15 cd
Amber	UL 1971*	88 cd	60 cd	24 cd	12 cd
Clear	UL 1971	110 cd	75 cd	30 cd	15 cd

** Equivalent Rating*

Wiring

Field wiring is connected to Genesis signals with terminals that accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring.



Specifications

Genesis Speakers and Speaker-Strobes	
Housing	Red or white textured UV stabilized, color impregnated engineered plastic.
Dimensions	Height: 6.5" (165 mm). Width: 5" (127 mm). Depth to wall: 1" (25 mm).
Mounting (indoor wall mount only)	Flush: North-American 4" square box, 2 1/8" (54 mm) deep. Surface: model G4B (white) or G4RB (red) surface mount box.
Wire Connections	Screw terminals: separate polarized inputs for speaker and strobe, #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	32-120° F (0-49° C) ambient temperature; 0-93% relative humidity.
Agency Listings	UL 1971, UL 1638, UL 1480, ULC S526, ULC S541, CSFM, MEA (FM pending) (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)

Speakers	
Input/Operating Volts	25 VRMS or 70 VRMS. See ordering information.
Speaker Taps/Output*	2 W = 89 dBA; 1 W = 86 dBA; ½ W = 83 dBA; ¼ W = 80 dBA
Speaker Cone	Speaker frequency response: 250 to 5,000 Hz. Optimized for voice intelligibility. 4-inch (102mm) mylar cone, sealed back construction.

Strobes	
Clear Strobe Output Rating	UL 1971, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Amber Strobe Output Rating	UL 1638: 13 (D), 26 (C), 65 (B), 95 (A)
Strobe Operating Voltage	16 - 33 Vdc Regulated, 16-33 V Full wave rectified (UL Voltage Designations "Regulated 24" and "24 fwr")
Strobe Flash Rate	One flash per second.
Strobe Flash Synchronization	All strobes: one flash per second (fps) within 200 milliseconds over 30 minutes on common circuit. All strobes: Synchronization source required to comply with UL 1971 synchronization standard. Temporal setting (private mode only): synchronized to temporal output on the same circuit.
Synchronization Sources	SIGA-CC1S, SIGA-MCC1S, SIGA-CC2A, SIGA-MCC2A, G1M-RM BPS6A, BPS10A, APS6A, APS10A, iO64, iO500, Fireshield Plus 3, 5 and 10 zone.
Strobe Lens Material	Polycarbonate

** Measured in reverberant room using 400-4,000 Hz band limited pink noise per UL 1480.*

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Ordering Information

Light output switch settings for UL 1971 listed models are selectable by numeric candela value.
ECS/MNS appliances are selectable by A, B, C, or D designations.
All speaker-strobes include field-selectable ¼, ½, 1, or 2 watt taps

Model	Housing	Marking	Lens	Strobe	Speaker	Ship Wt.
Life safety Appliances (c/w running man icon screen printed on housing)						
G4-S2	White	None	Clear	Selectable 15, 30, 75, or 110 cd	25 Volt	1.5 lbs. (0.68 kg)
G4R-S2	Red	None				
G4F-S2	White	FIRE				
G4RF-S2	Red	FIRE				
G4-S2VM	White	None				
G4R-S2VM	Red	None				
G4F-S2VM	White	FIRE				
G4RF-S2VM	Red	FIRE				
G4-S7	White	None		Selectable 15, 30, 75, or 110 cd	70 Volt	
G4R-S7	Red	None				
G4F-S7	White	FIRE				
G4RF-S7	Red	FIRE				
G4-S7VM	White	None				
G4R-S7VM	Red	None				
G4F-S7VM	White	FIRE				
G4RF-S7VM	Red	FIRE				
G4F-S7V1575	White	FIRE		15/75 cd[1]		
G4RF-S7V1575	Red	FIRE				
ECS/MNS Appliances (no running man icon on housing)						
G4WA-S2VMA	White	Alert	Amber	Selectable A, B, C or D	25 Volt	1.5 lbs. (0.68 kg)
G4WA-S2VMC		Alert	Clear			
G4WN-S2VMA		None	Amber			
G4WN-S2VMC		None	Clear			
G4WA-S2		Alert	None	Speaker only		
G4WN-S2		None	None			
G4WA-S7VMA		Alert	Amber	Selectable A, B, C or D	70 Volt	
G4WA-S7VMC		Alert	Clear			
G4WN-S7VMA		None	Amber			
G4WN-S7VMC		None	Clear			
G4WA-S7		Alert	None	Speaker only		
G4WN-S7		None	None			

Accessories

G1M-RM	Synchronization Output Module (1-gang)	0.2 (0.1)
SIGA-CC1S	Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S	Synchronization Output Module (Plug-in UIO)	0.18 (0.08)
G4B	Surface mount box, white	0.7 (0.32)
G4RB	Surface mount box, red	0.7 (0.32)

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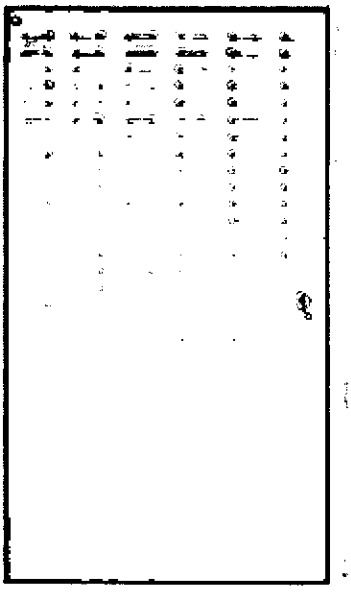
Auxiliary Power Supplies

APS6A, APS10A



Overview

The Auxiliary Power Supply (APS) is a UL 864, 9th Edition listed power supply. It is a 24 Vdc filtered-regulated, and supervised unit that can easily be configured to provide additional notification appliance circuits (NACs) or auxiliary power for Mass Notification/ Emergency Communication (MNEC), as well as life safety, security, and access control applications.

The APS contains the circuitry to monitor and charge internal or external batteries. Its steel enclosure has room for up to two 24 ampere-hour batteries. For access control-only applications, the APS can support batteries totaling up to 65 ampere-hours in an external enclosure. The APS has four Class B (convertible to two Class A) NACs. These can be activated in one or two groups from the APS's unique dual input circuits. The APS has a door-mounted AC power indicator LED.

The APS also has room for and can power a number of different modules. These can be Signature AA-30 or AA-50 dual-channel audio amplifiers, SIGA-UIO modules and/or SIGA-RELs. A MN-BKRT3 can also be installed. This bracket can accommodate an MN-NETSW1 Ethernet network switch, an MN-FVPN VoIP module and a MN-COM1S Communications module

The APS is available in 6.5 or 10 ampere models. Each output circuit is has a capacity of three amperes; total current draw cannot exceed the unit's rating.

Features

- Allows for reliable filtered and regulated power to be installed where needed
- Cost effective system expansion
- Provides for Genesis and Enhanced Integrity notification appliance synchronization
- Supports coded output operation
- Self-restoring overcurrent protection
- Multiple signal rates
- Can be cascaded or controlled independently
- Easy field configuration
- On-board diagnostic LEDs identify wiring or internal faults
- Standard Edwards keyed lockable steel cabinet with removable door
- 110 and 230 Vac models available
- Accommodates 18 to 12 AWG wire sizes
- Optional tamper switch
- Dual battery charging rates
- Optional earthquake hardening: OSHPD seismic pre-approval for component Importance Factor 1.5

The APS meets current UL requirements and is listed as under the following standards:

Standard (CCN)	Description
UL864 9th edition (UOXX)	Fire Alarm Systems
UL636 (ANET, UEHX7)	Holdup Alarm Units and Systems
UL609 (AOTX, AOTX7)	Local Burglar Alarm Units and Systems
UL294 (ALVY, UEHX7)	Access Control Systems
UL365 (APAW, APAW7)	Police Station Connected Burglar Alarm Units and Systems
UL1076 (APOU, APOU7)	Proprietary Burglar Alarm System Units
UL1610 (AMCX)	Central Station Alarm Unit
ULC-S527 (UOXXC)	Control Units, Fire Alarm (Canada)
ULC-S303 (AOTX7)	Local Burglar Alarm Units and Systems (Canada)
C22.2 No. 205	Signaling Equipment (Canada)

Application

The APS provides additional power and circuits for notification appliances and other 24 Vdc loads. It is listed for indoor dry locations and can easily be installed where needed.

Fault conditions are indicated on the on-board diagnostic LEDs, opening the BPS input sense circuit and the trouble relay (if programmed). While this provides indication to the host system, the APS can still be activated upon command. A separate AC Fail contact is available on the APS circuit board, which can be programmed for trouble or AC Fail. There are seven on-board diagnostic LEDs: one for each NAC fault, one for battery fault, one for ground fault, and one for AC power.

The unique dual-input activation circuits of the APS can be activated by any voltage from 6 to 45 VDC (filtered-regulated) or 11 to 33 Vdc (full-wave rectified, unfiltered). The first input circuit can be configured to activate 1-4 of the four possible outputs. The second input circuit can be configured to control circuits 3 and 4. When outputs are configured for auxiliary operation, these circuits can be configured to stay on or automatically deactivate 30 seconds after AC power is lost. This feature makes these circuits ideal for door holder applications. The APS also has a separate 200 mA 24 Vdc output that can be used to power internal activation modules.

APS NACs can be configured for a 3-3-3 temporal or continuous output. California temporal rate outputs are also available on certain models. This makes the APS ideal for applications requiring signaling rates that are not available from the main system.

In addition to the internally generated signal rates, the APS can also be configured to follow the coded signal rate of the main system NACs. This allows for the seamless expansion of existing NACs.

At the top of the steel enclosure, the APS has space and mounting bosses for:

- Up to two SIGA-AA30 or SIGA-AA50 dual-channel audio amplifiers
- One MN-BRKT3 with one MN-NETSW1 Ethernet switch, one MN-FVPN VoIP module, and one MN-COM1S communication module
- One SIGA-UIO6 or SIGA-UIO6R module motherboard
- Up to two SIGA-UIO2R module motherboards
- Up to two SIGA-REL releasing modules
- Up to two SIGA MP2L mounting plates modules

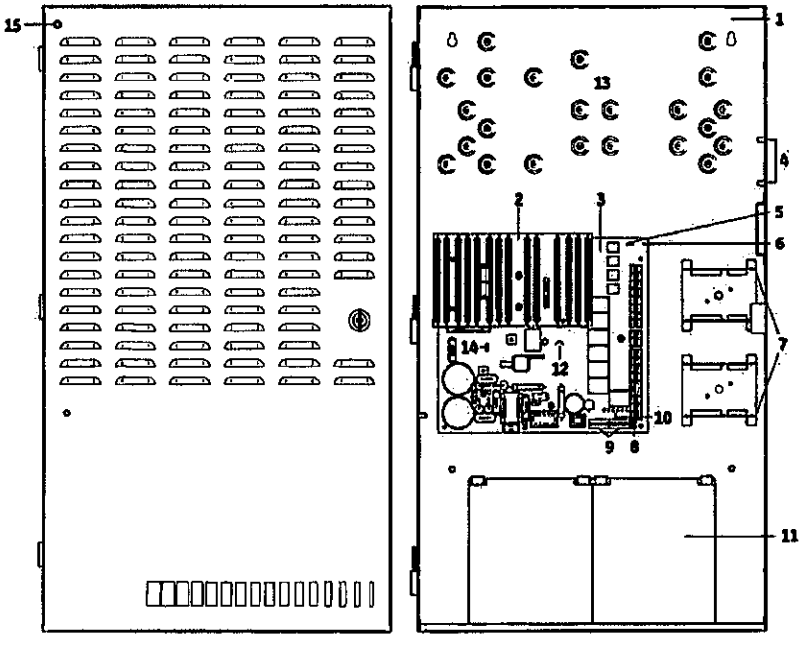
The above devices are in addition to the three factory-installed Signature module mounting brackets to the right of the APS circuit board.

Engineering Specification

Supply, where needed, Edwards APS Series Auxiliary Power Supplies (APS) that are interconnected to and supervised by the main system. The APS shall function as a stand-alone auxiliary power supply with its own fully-supervised battery compliment. The APS battery compliment shall be sized to match the requirements of the main system. The APS shall be capable of supervising and charging batteries having the capacity of 24 ampere-hours for Mass Notification/Emergency Communication (MNEC), life safety and security applications, and the capacity of 65 ampere-hours for access control applications.

<<The APS shall be capable of installation for a seismic component Importance Factor of 1.5.>>The APS shall provide a minimum of four independent, fully supervised Class B circuits that can be field configurable for notification appliance circuits or auxiliary 24 Vdc power circuits. APS NACs shall be convertible to a minimum of two Class A NACs. Each APS output circuit shall be rated at 3 amperes at 24 VDC. Each output circuit shall be provided with automatically restoring overcurrent protection. The APS shall be operable from the main system NAC and/or Edwards Signature Series control modules. APS NACs shall be configurable for continuous, 3-3-3 temporal or optionally, California rate. Fault conditions on the APS shall not impede operation of main system NAC. The APS shall be provided with ground fault detection circuitry and a separate AC fail relay.

Cabinet Layout

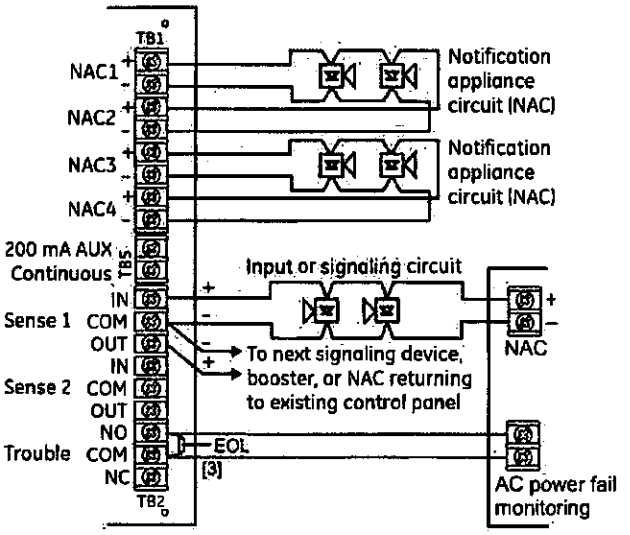


1 Enclosure: Houses the electronics and two standby batteries
2 Heat sink: Distributes heat away from the circuit board
3 Circuit board: Provides connections for all circuits
4 Tamper switch standoffs: 3-TAMP mounting standoffs
5 Jumper JP3: Ground fault enable or disable option
6 AC LED: AC power on
7 Mounting brackets: Option module mounting brackets
8 Jumpers JP1 and JP2: Class A or Class B NAC option
9 DIP switches: Two eight-position DIP switches used for configuration
10 Circuit LEDs: NAC, battery, and ground fault trouble LEDs
11 Batteries: Up to two 12 V 24 Ah batteries fit in the enclosure. For larger batteries, use an external battery cabinet (BC-1 or BC-2).
12 Jumper JP4: Battery charging jumper
13 Option module (SIGA-REL, SIGA-UIO6/6R/2, SIGA-MP2L) and MN-BRKT3 mounting area
14 Remote LED wiring harness connection
15 Remote LED: Indicates AC power is on

Typical Wiring

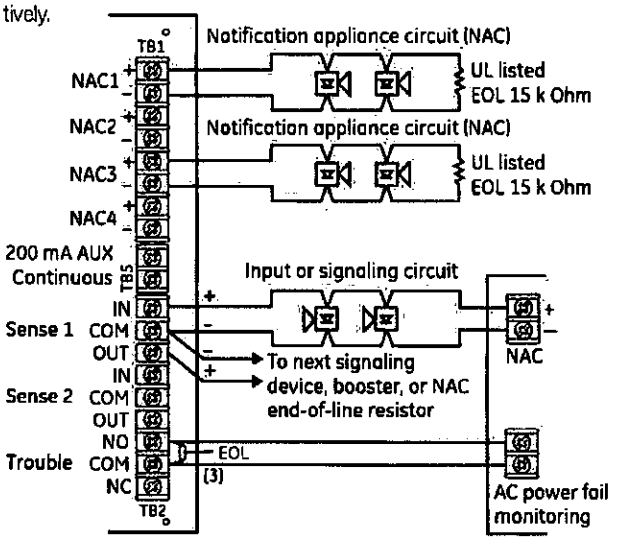
NAC Class A wiring

Connect a single NAC circuit to one NAC output. Terminate the circuit with a 15 k Ohm EOL resistor.



NAC Class B wiring

Connect one NAC circuit to one NAC output, either NAC1 or NAC3. Terminate the circuit at the NAC2 or NAC4 terminal screw, respectively.



NAC wiring notes:

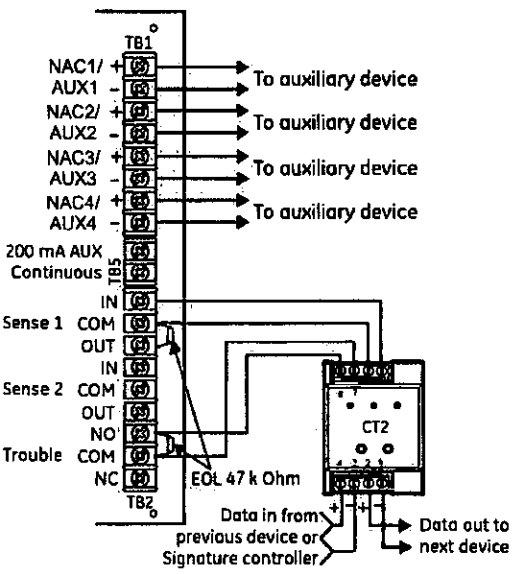
1. A trouble on the APS is sensed on the existing control panel's NAC circuit causing a NAC trouble on that panel. This removes the need to separately monitor the trouble contact except for AC power failure (see [3] below).

   In an alarm condition, the APS allows NAC current to move downstream to devices connected to the existing control panel's NAC circuit.
2. Refer to the connected control panel's documentation for more details on NAC wiring.

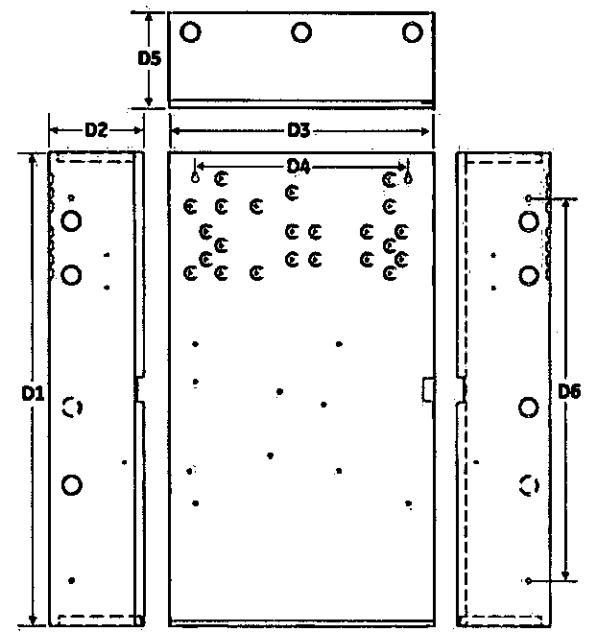
[3] The AC power failure panel connection annunciates at the panel but does not report off premises for a predetermined time period in U.S. fire applications.

Trouble relay wiring with four AUX circuits

When all four NAC/AUX circuits are configured as AUX circuits and DIP switch SW2-6 is ON, a SIGA-CT2 module must be used to monitor the sense 1 trouble contacts and the trouble relay.



Dimensions



D1	D2	D3	D4	D5	D6
26.0 in (66 cm)	5.3 in (13.5 cm)	15.0 in (38 cm)	12 in (30.5 cm)	5.3 in (13.5 cm)	21.0 in (53.3 cm)

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Specifications

Model	6.5 amp APS	10 amp APS
AC Line Voltage	120VAC or 220-240VAC 50/60Hz 390 watts	120VAC or 220-240VAC 50/60Hz 580 watts
Sense voltage (input)	6 to 45 Vdc, 11 to 33 Vrms (FWR and unfiltered DC)	
Sense current (input)	6 mA @ 24 Vdc, 3 mA @ 12 Vdc, 12 mA @ 45 Vdc	
NAC/AUX output voltage	19.1 to 26.85 Vdc	
NAC/AUX output current	3.0 A max. per circuit (10 A or 6.5 A max. total for all NACs) (10 A or 6.5 A max. total for all AUXs) [2]	
NAC/AUX class	Class B or Class A	
Wire size	18 to 12 AWG (0.75 to 2.5 sq mm)	
NAC EOL	UL: 15 k Ohm (P/N EOL-15) ULC: Use P/N EOL-P1 and select the 15 k Ohm resistor	
Auxiliary output (continuous)	1 dedicated 200 mA auxiliary output, not supervised by APS, included in total current	
Common trouble relay	Form C, 1 A, 30 Vdc (resistive)	
Battery requirements [1]	6.5 to 24 Ah for fire and up to 65 Ah for security applications Under 10 Ah, cut JP4. 10 Ah or above, do not cut JP4.	
Battery charger current limit	1.2 A when the battery jumper wire is cut 2.1 A when the battery jumper wire is not cut	
Operating environment Temperature Humidity	 32 to 120 °F (0 to 49 °C) 0 to 93% RH, noncondensing	
Ground fault impedance	10 k Ohm	
Intended installation environment	Indoor-dry	

[1] The maximum battery size the panel can charge is 24 Ah (12V24A or equivalent) for fire and security applications.
[2] The maximum current is 8 amps for auxiliary circuits that operate when the panel is in standby.

Ordering Information

Catalog Number	Description	Shipping Wt. lb (kg)
APS6A	6.5 Amp Auxiliary Power Supply	26 (11.8)
APS6A/230	6.5 Amp Auxiliary Power Supply (220V)	
APS10A	10 Amp Auxiliary Power Supply	
APS10A/230	10 Amp Auxiliary Power Supply (220V)	

Related Equipment

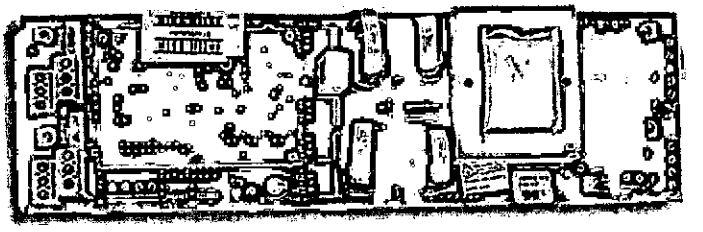
MN-BRKT3	MN-FVP series mounting bracket for APS-(6)(10)A power supplies	
BC-1EQ	Seismic Kit for BC-1. Order BC-1 separately. See note 3.	
APSEQ	Seismic kit for APS6A or APS10 Auxiliary Power Supplies. See note 3	
12V6A5	12 V, 7.2 Amp Hour Battery, two required	3.4 (1.6)
12V10A	12 V, 10 Amp Hour Battery, two required	9.5 (4.3)
12V17A	12 V, 18 Amp Hour Battery, two required	13 (5.9)
12V24A	12 V, 24 Amp Hour Battery, two required	20 (9.07)
12V40A	12 V, 40 Amp Hour Battery, two required (see notes 1, 2)	32 (14.5)
12V50A	12 V, 50 Amp Hour Battery, two required (see notes 1, 2)	40 (18.14)
12V65A	12 V, 65 Amp Hour Battery, two required (see notes 1, 2)	49 (22.2)
3-TAMP	Tamper switch	1.0 (0.6)
BC-1	Battery Cabinet (up to 2 - 40 Amp Hour Batteries)	58 (26.4)

Notes
1. Requires installation of separate battery cabinet.
2. APS supports batteries greater than 24 Amp hours for access control applications only.
3. For earthquake anchorage, including detailed mounting weights and center of gravity detail, refer to Seismic Application Guide 3101676. Approval of panel anchorage to site structure may require local AHJ, structural or civil engineer review.

EST™
Life Safety & Communications

Intelligent Audio Amplifiers

SIGA-AA30, SIGA-AA50



Overview

SIGA amplifiers are high efficiency switch mode audio amplifiers available in 30 and 50 watt sizes. Amplifiers have two input channels supporting dual channel or single channel audio applications. Amplifier project application flexibility is enhanced by provision for input levels at 1Vrms or 25Vrms. This allows SIGA amplifiers to obtain their input from a line level signal or the output of another 25Vrms amplifier. This feature provides great application flexibility helping meet project requirements. Input channel selection is made through system software programming transmitted to the amplifier via a Signature data circuit. This reduces wiring interconnect requirements by reducing the number of control modules needed.

Each amplifier has provision for connecting back up amplification. Amplifiers can be backed up one-to-one or multiple amplifiers can have one shared back up amplifier. In addition to back up amplifiers each SIGA amplifier has an on board 1kHz tone generator that can activate in the event of input failure or if no back up amplifier is available.

Standard Features

- Remote or Local mounting
- Two channel input
- Connects to signature data circuit. Allows switching between two channels without additional control modules. Eliminates the need for additional amplifier monitoring.
- Output selectable as 25Vrms or 70Vrms
- Dual input level allows the use of a 1Volt or 25Volt input signal.
- Back up amplifier connection
- Back up 1kHz tone generator

Application

Signature amplifiers are ideally suited for distributed audio applications and small centrally banked applications. The audio output is configurable as 25Vrms or 70Vrms in Class B or Class A wiring configurations. Speakers can connect directly to the output of the amplifier or the amplifier output can run as a audio riser to signature modules where speaker zone selection is made. Each amplifier has a built in 1kHz tone generator and provision for a back up amplifier. Should an amplifier lose its input signal the output will switch to a back up amplifier. If there is no back up amplifier or the output from the back up is unavailable the output will receive the internal 1kHz tone as the evacuation signal. On board status LEDs provide quick visual indication of amplifier status including, Power Amp. Enabled, Backup Mode, Amplifier Active, and Normal Communications.

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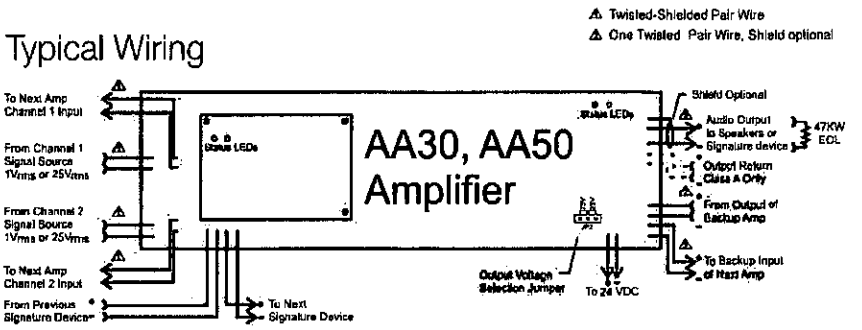
Engineering Specification

System remote amplifiers must communicate their status directly to the main control panel. External monitoring is not acceptable. Each amplifier must support dual channel audio. Amplifiers must support input signals at line a built in back up 1kHz tone generator that automatically activates with loss of input signal. Each amplifier must have provision for a back up amplifier. It must be possible to default to back up tone or standby amplifier in the event of the loss of input signals.

Typical Wiring



Specifications

Catalog Number	SIGA-AA30	SIGA-AA50
Active Power Required	1700 mA @ 24 Vdc	3200 mA @ 24 Vdc
Audio Power Output	30 Watts @ 25Vrms or 70Vrms	50 Watts @ 25Vrms or 70Vrms
Primary Inputs	Dual inputs, each 1Vrms	
Standby Power Required	1mA @ 24 Vdc	
Agency Listings	UL	
Frequency Response	800Hz to 2.8kHz (ULI) 400 Hz to 4 kHz (ULC), at -3db	
Harmonic Distortion	<5%	
Signature Data Circuit	2 module addresses	
Terminal Wire Gauge	18-12 AWG (0.75-2.5 mm²)	
Mounting	One space in RACCR, 2-WB3 or 2-WB7	
Relative Humidity	10-93% non condensing	
Temperature Rating	0°-49°C (32° - 120°F)	
Back up tone	1kHz	
Wiring Styles	Class A or Class B Output	

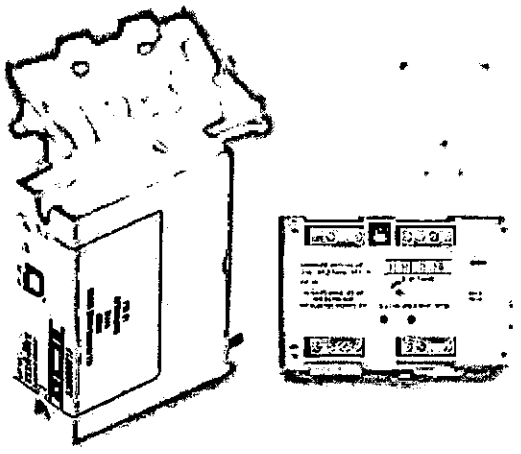
Ordering Information

Catalog Number	Description	Ship Wt. lb. (kg)
SIGA-AA30	30 Watt Intelligent Audio Amplifier	2 (.9)
SIGA-AA50	50 Watt Intelligent Audio Amplifier	2 (.9)
SIGA-AA30-CS	30 Watt Intelligent Audio Amplifier (for connection to 25Vrms inputs)	2 (.9)
SIGA-AA50-CS	50 Watt Intelligent Audio Amplifier (for connection to 25Vrms inputs)	2 (.9)
Wallboxes		
2-WB3	EST2 Long Surface Wallbox (order 2-WB3D door separately) - Gray finish. For Semi-Flush mounting order Trim Kit. See note 1	38 (17.3)
2-WB7	EST2 Double Wide Surface Wallbox (order 2-WB7D door separately) - Gray finish. For Semi-Flush mounting order Trim Kit. See note 1	75 (34)
RACCR	Remote Audio Closet Cabinet (order RACCDR door separately). Red Finish	32 (14.5)
Trim Kits		
2-LFK	Long Semi-Flush Trim Kit for 2-WB3 wallbox. See note 1	4 (1.8)
2-DFK	Double Wide Semi-Flush Trim Kit for 2-WB7 box. See note 1	5 (2.3)
Note 1: Standard finish is gray, red versions are available by adding suffix R to the catalog number e.g. 2-WB3R		
Related Equipment		
SIGA-APS	6.4 Amp Power Supply	2 (.9)
SIGA-APS-220	6.4 Amp Power Supply 220 Vac	2 (.9)

EST™
Life Safety & Communications

Synchronization Output Module

SIGA-CC1S, MCC1S



UL
ULC
MEA
Patented

Overview

SIGA-CC1S and MCC1S Synchronization Output Modules are intelligent analog addressable devices that form part of EST's Signature line of products. The actual operation of the SIGA-CC1S and MCC1S is determined by the "personality code" selected by the installer, which is downloaded to the module from the Signature loop controller during system configuration.

Depending on their assigned personality, Synchronization Output Modules may be used as a signal power riser selector to provide synchronization of fire alarm signals across multiple zones, or for connecting, upon command from the loop controller, supervised Class B signal or telephone circuits to their respective power inputs. The power inputs may be polarized 24 Vdc to operate audible and visible signal appliances or 25 and 70 VRMS to operate audio evacuation speakers and firefighter's telephones.

Standard Features

- **Provides UL 1971-compliant auto-sync output for visual signals**
  Use for connecting a supervised output circuit to a supervised 24 Vdc riser input and synchronizing multiple notification appliance circuits.
- **Functions as an audible signal riser selector**
  Use as a synch module or for connecting supervised 24 Vdc Audible/Visible signal circuits, or 25 and 70 VRMS Audio Evacuation and Telephone circuits to their power inputs.
- **Built-in ring-tone generator**
  When configured for telephone circuits, the SIGA-CC1S generates its own ring-tone signal, eliminating the need for a separate ring-tone circuit.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool; there are no switches or dials to set.
- **Intelligent device with microprocessor**
  All decisions are made at the module to allow lower communication speed with substantially improved control panel response time and less sensitivity to line noise and loop wiring properties; twisted or shielded wire is not required.

DATA SHEET 85001-0543
Not to be used for installation purposes. Issue 3.1

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Application

The SIGA-CC1S mounts to a standard North American two-gang electrical box, making it ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

The SIGA-MCC1S is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CC1S, but takes advantage of the modular flexibility and easy installation that characterize all UIO modules. Two- and six-module UIO motherboards are available. These can accommodate individual risers for each on-board module, or risers that are shared by any combination of its UIO modules. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in Edwards enclosures.

Personality Codes

The operation of the SIGA-CC1S is determined by their sub-type code or "Personality Code". The code is selected by the installer depending upon the desired application and is downloaded from the loop controller.

Personality Code 5: Signal Power or Audio Evacuation (single riser). Configures the module for use as a Class B Audible/Visible Signal power (24 Vdc polarized) or Audio Evacuation (25 or 70 VRMS) power selector. The ring-tone generator is disabled. The output circuit is monitored for open or shorted wiring. If a short exists, the control panel inhibits the activation of the audible/visible signal circuit to prevent connection to the power circuit.

Personality Code 6: Telephone with ring-tone (single riser). Configures the module for use as a Telephone power selector. When a telephone handset is plugged into its jack or lifted from its hook, the module generates its own Ring-Tone signal. A separate ring-tone circuit is not needed. The module sends this signal to the control panel to indicate that an off-hook condition is present. When the system operator responds to the call, the ring-tone signal is disabled.

Personality Code 25: Visual Signal Synchronization. This personality code configures the module to provide synchronization of fire alarm signals across multiple zones. It functions as a signal power (24 Vdc) riser selector. The output wiring is monitored for open circuits and short circuits. A short circuit will cause the fire alarm control panel to inhibit the activation of the audible/visual signal circuit so the riser is not connected to the wiring fault.

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your fire protection specialist.

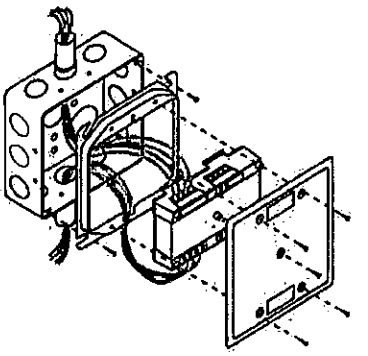
Edwards recommends that these modules be installed according to latest recognized edition of national and local fire alarm codes.

Compatibility

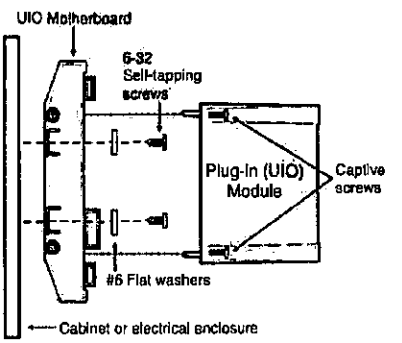
The Synchronization Output Module is compatible with EST's Signature Loop Controller operating under EST3 version 2.0 or higher, and QuickStart Signature Loop Intelligent Controller.

Installation

The SIGA-CC1S: mounts to North American 2-1/2 inch (64 mm) deep 2-gang boxes and 1-1/2 inch (38 mm) deep 4 inch square boxes with 2-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



SIGA-MCC1S: mount the UIOxR motherboard inside a suitable Edwards enclosure with screws and washers provided. Plug the module into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIOxR motherboard terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



Electronic Addressing

The loop controller electronically addresses each module saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its "on-board memory". The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

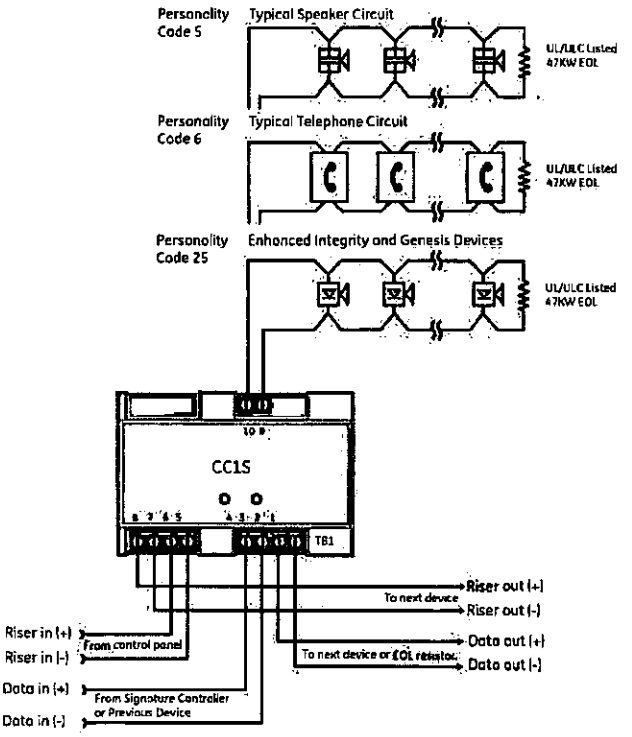
Testing & Maintenance

The module's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each module and other pertinent messages. Single modules may be turned off (de-activated) temporarily, from the control panel.

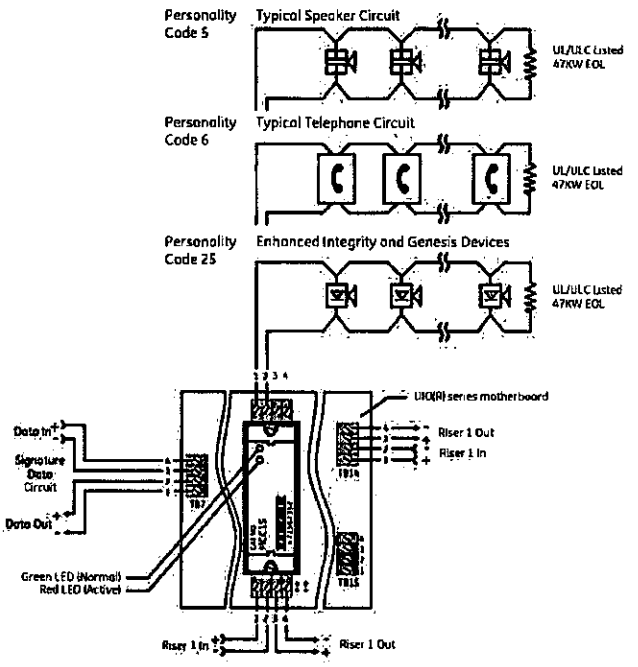
Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Typical Wiring

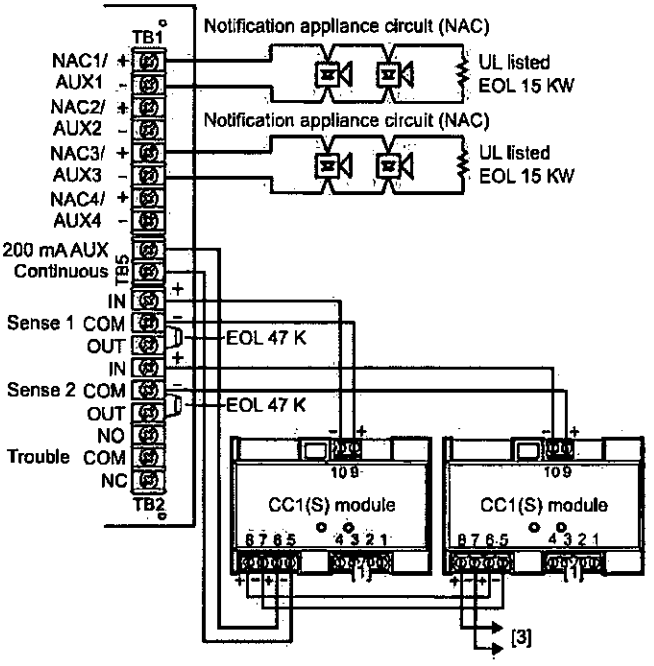
SIGA-CC1S (Standard Mount)



SIGA-MCC1S (UIO Mount)



Multiple CC1(S) modules using the BPS's sense inputs



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Specifications

Catalog Number	SIGA-CC1S	SIGA-MCC1S
Mounting	North American 2½ inch (64 mm) deep two-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 2-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards
Description	Synchronization Output Module	
Type Code	50 (factory set)	
Address Requirements	Uses one module address	
Wiring Terminations	Suitable for #12 to #18 AWG (2.5 mm² to 0.75mm²)	
Operating Current	Standby = 223µA Activated = 100µA	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)	
Output Rating	24 Vdc = 2 amps 25 V Audio = 50 watts 70 V Audio = 35 watts	
Construction	High Impact Engineering Polymer	
Storage and Operating Environment	Operating: 32°F to 120°F (0°C to 49°C) Storage: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH	
LED Operation	Green LED - Flashes when polled Red LED - Flashes when in alarm/ active	
Compatibility	Use with: Signature Loop Controller under EST3 version 2.0 or higher	
Agency Listings	UL, ULC, CSFM, MEA	

Ordering Information

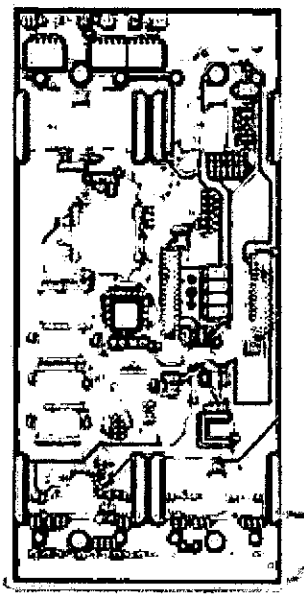
Catalog Number	Description	Shipping Wt. lbs (kg)
SIGA-CC1S	Synchronization Output Module (Standard Mount) - UL/ULC Listed	0.5 (0.23)
SIGA-MCC1S	Synchronization Output Module (UIO Mount) - UL/ULC Listed	0.18 (0.08)

Related Equipment

27193-21	Surface Mount Box - Red, 2-gang	2 (1.2)
27193-26	Surface Mount Box - White, 2-gang	2 (1.2)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs - Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs - Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board - Six Module Positions	0.56 (0.25)
235196P	Bi-polar Transient Protector	0.01 (0.05)
MFC-A	Multifunction Fire Cabinet - Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

EST3 Central Processor Unit

3-CPU3, 3-RS485A, 3-RS485B, 3-RS232



EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending.

Overview

The 3-CPU3 is the Central Processing Unit Module monitoring the status of all modules and providing the link for network communications. Although each local rail card contains their own microprocessor, the 3-CPU3 provides all inter-module communication and has the ability to download rail module operating parameters. Upon power up the 3-CPU3 automatically learns all local rail module attributes and locations. Site specific software is loaded into the 3-CPU3 which then downloads data to each local rail module. Firmware upgrades are also done from the 3-CPU3 eliminating the need to unplug chips on rail modules.

Mounting must be in the first two local rail spaces of the upper 3-CHAS7 (module chassis). Options for the 3-CPU3 include the addition of an LCD display and User Interface, RS-232 Communication Card, and RS-485 Series Network Communication Cards.

The 3-CPU3 is fully compatible on the same network with the 3-CPU and 3-CPU1 modules.

Standard Features

- Up to 1,000 history events
- RS-485 local rail communications
- Multiplexed audio channels
- Network communication media can consist of twisted copper RS485, short-haul modems and/or single or multimode fiber optic cables
- RS-232 communication card
- Form 'C' contacts for: Alarm, Supervisory and Trouble
- Low voltage memory write protection
- Non-volatile memory

Application

The 3-CPU3 helps make EST3 an extremely powerful and flexible system. As a single node, stand alone system a single 3-CPU3 controls 1 to 19 additional local rail modules. For larger systems, up to 64 nodes interconnect on a peer-to-peer multi-priority token ring protocol network.

The 3-CPU3 controls all local panel responses to automatic, user initiated, or network reported events. As a network node, it is an equal among peers, there is no master on the network. This gives exceptional response times over the network, less than three seconds.

Each 3-CPU3 provides slots at the back for mounting Network, and RS-232, cards. Removable terminal blocks on the 3-CPU3 support connection of network and audio data wiring. On board common relays also terminate at the 3-CPU3 terminals. To aid in trouble shooting and service, status LEDs monitor local rail, network, RS232 and audio data communications.

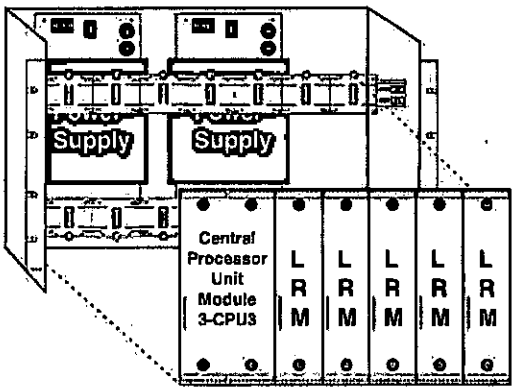
The **Network Communications** card mounts to the back of the Central Processor Unit. The 3-RS485A card provides a Class A (Style 7) or Class B (Style 4) circuit for network communications signals and support for a Class B (Style 4) or Class A (Style 7 - dual Style 4) circuit for the digitized audio signals. The 3-RS485B card provides a Class B (Style 4) or Class A (Style 7) circuit for network communications signals and a second Class B (Style 4) circuit for the digitized audio signals. Network messages received by the Network Communications card are re-transmitted to the next network node. Re-transmission maximizes the wire run lengths between nodes. With 64 nodes miles of network length is possible. Fail safe mechanisms built into the card direct connect the data input and output ports should the network card or its related Central Processor fail. Network communications may be configured via copper or fiber media using the 3-FIBMB.

The **3-RS232 Communication Card** mounts to the back of the 3-CPU3. The 3-RS232 has two optically isolated RS-232 ports. The ports support connection of a printer and/or an external command center. Entire network downloading from one location (to all 64 nodes) is available through the RS-232 card.

Engineering Specification

It must be possible to support a single stand alone node or up to 64 nodes communicating on a peer-to-peer token ring protocol network. Network and digitized audio wiring shall be run in a [choose one: Class A (Style 7) or Class B (Style 4)] configuration. Network alarm response from alarm input to signal activation must be under 3 seconds. All field wiring must be to removable terminal blocks. Status LEDs must be provided for communications of network and internal rail communications. Inter-node communication speed must be programmable. Internal rail communications speed must be programmable.

Installation and Mounting



Data

Maximum resistance between any 3 panels	90 Ohms
Maximum capacitance between any 3 panels	0.3 µF
Maximum distance between any 3 panels via RS485	5,000 ft. (1,524 m)

Capacitance, entire network

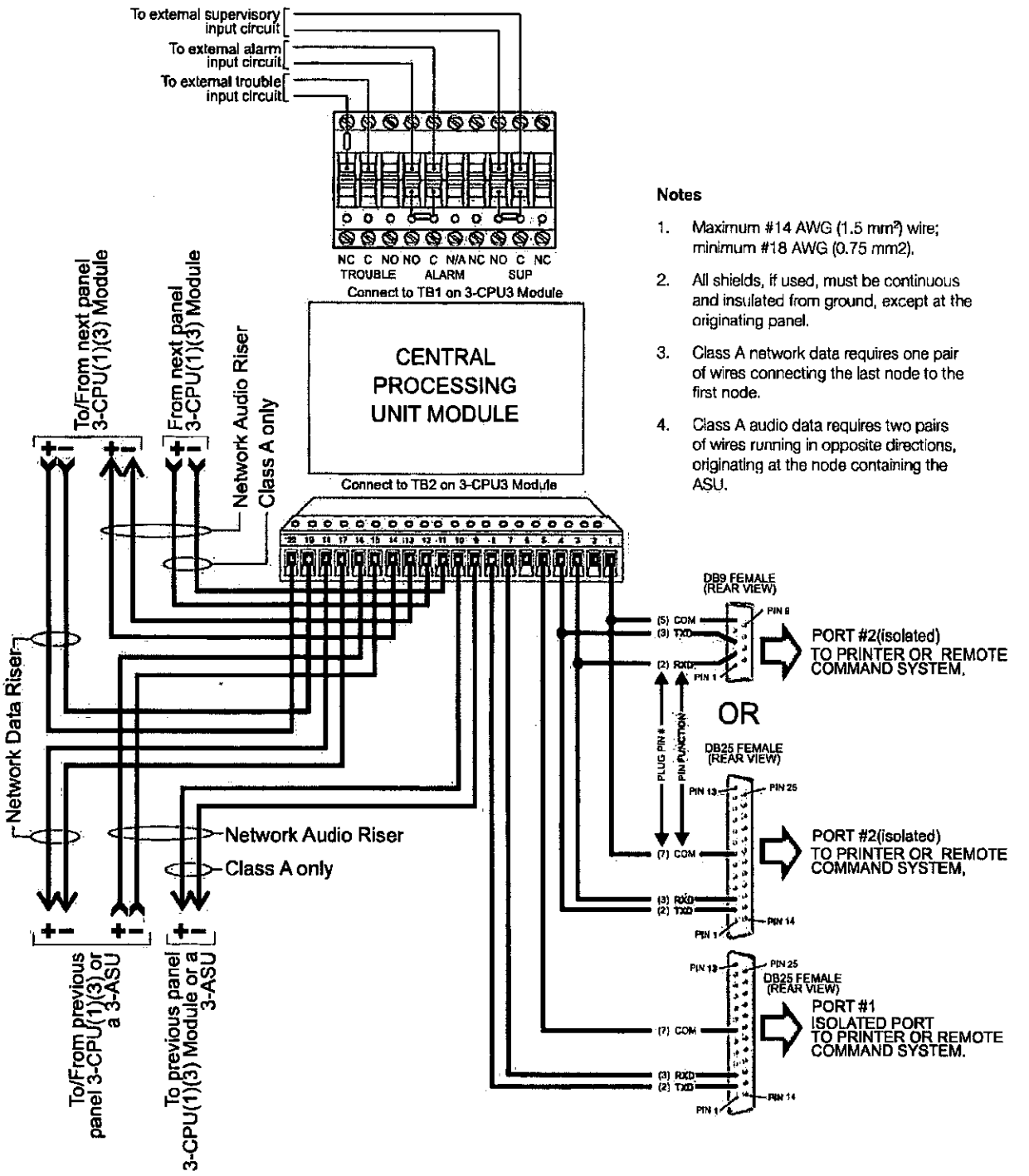
Maximum Accumulative Capacitance

Wire Size	38.4K Baud	19.2K Baud
18 AWG	1.4 µF	2.8 µF
16 AWG	1.8 µF	3.6 µF
14 AWG	2.1 µF	4.2 µF

Audio

Maximum resistance between any 3 panels	90 Ohms
Maximum capacitance between any 3 panels	0.09 µF
Maximum distance between any 3 panels via copper RS485	5,000 ft. (1,524 m)

Typical Wiring



Notes

1. Maximum #14 AWG (1.5 mm²) wire; minimum #18 AWG (0.75 mm2).
2. All shields, if used, must be continuous and insulated from ground, except at the originating panel.
3. Class A network data requires one pair of wires connecting the last node to the first node.
4. Class A audio data requires two pairs of wires running in opposite directions, originating at the node containing the ASU.

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Specifications

3-CPU3

Agency Listings	UL, ULC, CSFM, CE, LPCB EN54* pending.
Mounting	2 - Left most local rail spaces
Terminal Size	18-12 AWG (1.0mm² to 2.5mm²)
Standby Current	155 mA
Alarm Current	165 mA
Contact Ratings	Nonbypassable Alarm, Supervisory and Trouble Form 'C' 1A at 30 Vdc
Data Down Loading	RJ14 Jack
Operating Environment	0°C - 49°C (32° F - 120° F); 93% at 40° C Non-Condensing

**EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending*
Note: CPU current includes the main power supply, since the CPU and PPS cannot be measured separately.

Option Cards

Catalog number	**3-RS232**	**3-RS485A**	**3-RS485B**
Standby Current	58 mA	98 mA	98 mA
Alarm Current	58 mA	98 mA	98 mA
Communication Ports	Two optically isolated RS-232	Three RS-485 Class A (Style 7)	One Class B (Style 4) or Class A (Style 7) network data circuit and one Class B (Style 4) audio data circuit
Agency Listings	UL, ULC, CSFM, CE, LPCB, EN54 pending*.		
Mounting	Back of 3-CPU3		
Operating Environment	0° C - 49° C (32° F - 120° F); 93% at 40° C Non-Condensing		

*EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending

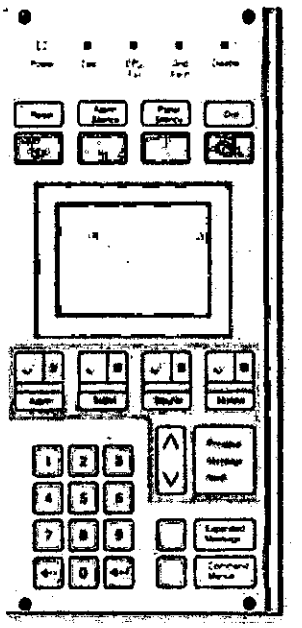
Ordering Information

Catalog Number	**Description**	**Ship Wt. lb (kg)**
3-CPU3	Central Processor Unit Module	0.7lb (0.32kg)
3-RS485A	Network Communications Card, Class A (Style 7)	0.33lb (0.15kg)
3-RS485B	One Class A/B network data circuit and one Class B audio data circuit	0.33lb (0.15kg)
3-RS232	RS-232 Communication Card	0.33lb (0.15kg)
3-CPUDR	CPU doors with filler plates. Order separately, one required per CPU where no LCD display is installed.	0.25lb (0.11kg)

Life Safety & Communications

Liquid Crystal Display Module

3-LCD



MEA

EN54-2:1997+A1 and EN54-4:1997+A1:2002-A2 pending

Overview

The Main Display interface is the primary user interface in the EST3 Life Safety System. The main display interface focuses on the emergency user by putting information important to the user up front. Hands free, the first highest priority event is shown. The display always gives the last highest priority event. Arriving at the panel and without opening the door the first and last alarm is given. Simple to understand lights and switches help the emergency user execute system commands with confidence.

A menu system supports maintenance functions such as disables or reports for use by staff or service personnel.

Standard Features

- Uses simple lights and switches
- Displays information important to user
- Hands free first alarm display
- Last event of highest priority always displays
- Eight lines by 21 character graphic LCD display — 168 characters total
- Multilingual
  Supports English, French, Spanish, and Russian
- Uses queues to sort events
  A queue is a list of messages Alarm, Supervisory, Trouble and Monitor
- Slide in LED and switch labels
  Makes customization for regional language easy

Application

The 3-LCD module mounts to the local rail over the nodes Central Processing Unit Module (3-CPU). The 3-LCD module is optional in any network node.

Ensuring information clarity the 3-LCD uses a backlit high contrast supertwist graphical display. Eight lines of 21 characters provide the room needed to convey emergency information in a useful format.

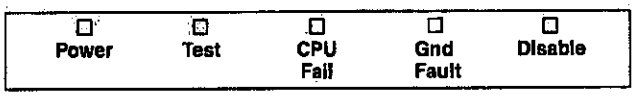
The 3-LCD always displays the last highest priority event even when the user is viewing other message queues. Further message flexibility is provided with EST3's message routing ability. Messages from a node can display at every node on the network or messages can route to specific nodes only. Routing can be initiated at a specific time/shift change. There is no need to have messages display in areas that are not affected by an event.

The 3-LCD can display messages in English, Spanish, French, and Russian. The bilingual display lets the operator select between either of two languages. Consult your representative for available language combinations.

The EST3 system configures for Proprietary, Local or EN54 market operations. The mode of operation is selected through the System Definition Utility (SDU) which may adjust the following operations slightly to fit the system operation selected.

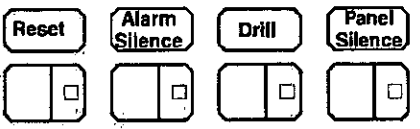
LEDs and Switches

Further enhancing the 3-LCD user interface are easy to read and understand lights and switches. All functions are laid out in a logical order. At the top of the 3-LCD are five system status LEDs. Here determining the general condition of the system is easy.



Power LED: Green, on when AC power is on.

Test LED: Yellow, on when any portion of the system (Group) is under test.



CPU Fail LED: Yellow, on when CPU stops running.

Gnd Fault LED: Yellow, on when a ground exists on the system (group)

Disable LED: Yellow, on when any point or zone is disabled by a user.

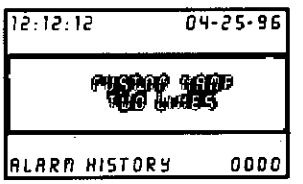
Below the general status LEDs are located four, LED / Switch common controls. The versatility of EST3 allows system designers to define the features as affecting a domain (defined group of nodes) or as global (affects all nodes) across the network. This feature is very useful when configuring systems with multiple buildings on one network. As an example, operating the reset in one building may have adverse effect in other buildings. With EST3 having operational differences between buildings on the same network is not a problem.

Pressing **Reset** starts the system's reset operation. The yellow LED has three flash rates during reset. The LED flashes fast during the smoke power down phase of reset, flashes slow during the restart phase, and turns on steady for the restoral phase. The Reset LED turns off when the system is normal.

Pressing **Alarm Silence** turns off all Notification Appliance Circuits defined as audible. The yellow LED turns on when silence is active via the Alarm Silence switch or via alarm silence software timers.

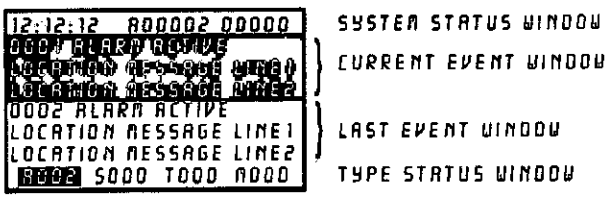
Pressing **Panel Silence** turns off the system's internal audible signal. The yellow LED turns on when panel silence is active. The EST3 panel buzzer has user programmable signal rates for alarm, supervisory, trouble and monitor conditions.

Pressing **Drill** turns on the drill LED and all signals sound evacuation. Drill does not activate city tie connections. Auxiliary relays will not activate unless programmed to do so with drill.



In the center of the 3-LCD is the Liquid Crystal Display. In the normal condition the date and time plus a definable system title display on the LCD. The last line of the display gives an alarm history. This total equals the number of times the system has entered the alarm state from the normal state.

When active events are on display, the LCD formats into four logical windows.

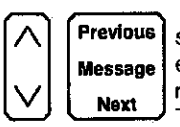


In the system status window, the display shows the time and the status of active and disabled points.

The current event window, lines 2, 3, 4 automatically display the first active event of the highest priority if the user has not taken control of the system. Once the emergency user takes control, this window displays user message selections.

The second line of the display shows system event information. In the example above the display shows the chronological number of the event (0001 is the first alarm) followed by the event type (Alarm Active). EST3 supports over 45 event type messages from which system designers choose. The last two lines of the current event window are custom programmable location message lines with space for 42 characters.

The last event window shows the last highest priority event. This window is always displayed and updated automatically by the system. Here the emergency user can monitor the progress of a fire.

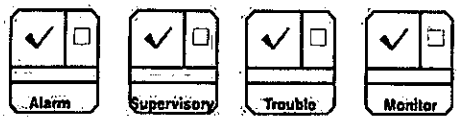


When EST3 is configured for a local mode system viewing the second alarm message is easy, just press the NEXT key. The next message scrolls into the current event window. The last highest priority event always remains on view. No matter what queue the user selects for viewing, the LCD always displays the most recent alarm. A new alarm event resounds the panel audible signal and appears immediately on display without overwriting information the user selected for view.

The final window of the LCD the type status window shows the total number of active events by queue type. A is alarm, S is supervisory, T is trouble, and M is monitor. The number following each letter is the number of active events existing in each queue.

EST3 breaks down event types into queues and automatically displays the first event of the highest priority type.

54

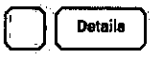


Priority order is alarm, supervisory, trouble, monitor. By using queues an emergency user does not waste time scrolling through a mixed event list looking for alarms or confusing an alarm message with other message types.

EST3 configures for **Remote proprietary** system operation where every event must be acknowledged by viewing them before the internal buzzer will silence. Or the EST3 will configure for **Local** operation. Here the internal buzzer silences by pressing panel silence. If any events exist in queues that have not been viewed the queue LED continues to flash informing the user of un-seen events.

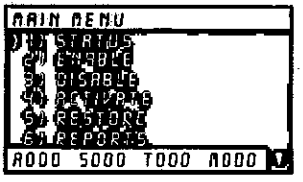
When all events in a queue are acknowledged or 'seen', the LED associated with the queue turns on steady. If a new event is added to the queue, the EST3 internal buzzer resounds and the queue LED flashes.

EST3 allows device grouping into logical group zones. Here two or more alarm devices (such as detectors or pull stations) make up the zone. When a device in the zone activates, the LCD displays the zone description. Each zone only displays once, regardless of the number of devices active within the zone.



To display device information the user presses the Details key. The device with the lowest address displays in the first window.

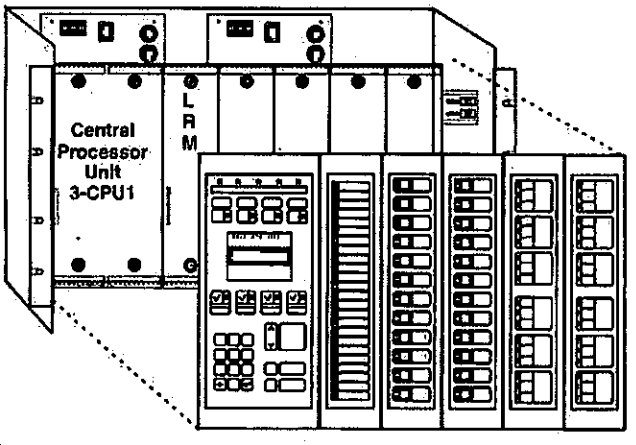
If multiple devices are active each is available for viewing by using the arrow associated with the Previous Message Next key and scrolling through the device list.



The common controls easily expand beyond the Main Display interface by adding a Control Display Module and assigning features to its switch controls.

For Maintenance users, the EST3 provides a smooth operating menu system providing powerful tools for system management, reports, and trouble shooting.

Installation and Mounting

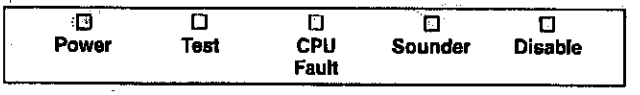


EN54 Compliance

In 1998 the British-based Loss Prevention Certification Board (LPCB) certified EST3 control panels and power supplies as having surpassed the requirements of the pivotal EN54 standard, parts two and four. LPCB Certificate #257c for EST3 fire alarm control panels marked the first such certification since the stringent EN54-2 : 1997 and EN54-4 : 1997 were published by the European Committee for Standardization (CEN). In order to meet these standards, display and control functions have undergone slight modifications for the EN54 marketplace. These differences are highlighted below. All other control and annunciation features remain unchanged.

Note: EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 approval is pending.

System Status LEDs



Power LED (Green): on when DC power is on.

Test LED (Yellow): on when any portion of the system (Group) is under test.

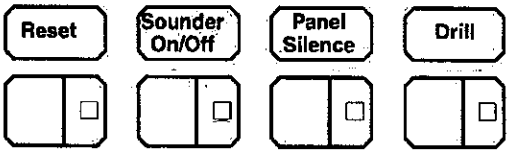
CPU Fault LED (Yellow): on when CPU stops running (processor failures must be manually reset).

Gnd Fault LED: Not available.

Sounder LED (Yellow): flashing indicates fault on sounder circuit. Steady indicates a disabled sounder circuit.

Disable LED (Yellow): on when any point or zone is disabled by a user (disabled conditions have priority over fault conditions).

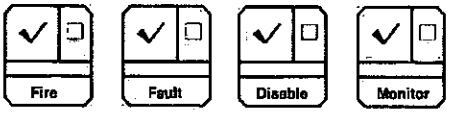
Switch Functions



Pressing **Sounder On/Off** turns off all sounder circuits defined as audible. The yellow LED turns on when silence is activated via the Sounder On/Off or via the alarm silence software timers.

See Page 2 for descriptions of Reset, Panel Silence, and Drill functions.

Event Queues



For EN54 compliance, EST3 configures for remote proprietary system operation. This requires that every event must be acknowledged by viewing them before the internal buzzer will silence. The priority order is Fire, Fault, Disable, Monitor. EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 approval is pending.

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Engineering Specification

The system shall provide a user interface that displays system events in a text format, and supports basic common control LEDs and switches. The Common Control Switches and LEDs provided as minimum will be; Reset switch and LED, Alarm Silence switch and LED, Panel Silence switch and LED, Drill switch and LED. It must be possible to add additional common controls as required through the use of modular display units. The user interface must provide an LCD that will allow custom event messages of up to 42 characters. The interface must provide a minimum of eight lines by 21 characters and provide the emergency user, hands free viewing of the first and last highest priority event. The last highest priority event must always display and update automatically. Events shall be automatically placed in easy to access queues. It shall be possible to view specific event types separately. Having to scroll through a mixed list of event types is not acceptable. The total number of active events by type must be displayed. Visual indication must be provided of any event type which has not been acknowledged or viewed. It must be possible to customize the designation of all user interface LEDs and Switches for local language requirements. It shall be possible to have a custom message for each device in addition to zone messages. Custom device messages must support a minimum of 42 characters each. Instructional text messages support a maximum of 1,000 characters each. The display shall be capable of displaying English, Spanish, French, or Russian messages.

Technical Specifications

Catalog Number	3-LCD
Agency Listings	UL, ULC, FM, CE, LPCB EN54* pending.
LCD Display	Eight lines by 21 characters backlit LCD
Mounting	Two local rail spaces on top of 3-CPU
Common Control Switches and LEDs	Reset switch and LED Alarm Silence switch and LED Panel Silence switch and LED Drill Switch and LED
Alarm Current	42mA
Standby Current	40mA

** EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending*

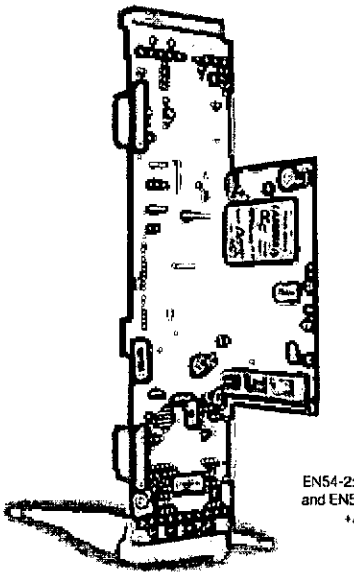
Ordering Information

Catalog Number	Description	Shipping Weight, lb. (kg)
3-LCD	Liquid Crystal Display Module.	.8 (.36)
3-LKE	UK English Label Kit	.25 (.11)
3-LKF	French Label Kit	.25 (.11)
3-LKR	Russian Label Kit	.25 (.11)
3-LKS	Spanish Label Kit	.25 (.11)

Life Safety & Communications

Signature Driver Controller Modules

3-SSDC1, 3-SDDC1, 3-SDC1



EN54-2:1997+A1: 2006 and EN54-4:1997+2002 +A2 : 2006

Overview

The 3-SSDC1 and 3-SDDC1 Signature Driver Controller modules provide an intelligent interface between the 3-CPU3 module and Signature Series devices. Each module contains its own microprocessor used to coordinate, process and interpret information received from and sent to Signature devices. Power and communications is received directly from the control panel rail assembly. The 3-SSDC1 Single Signature Driver Controller module supports one Signature Data circuit, while the 3-SDDC1 Signature Dual Driver Controller module supports two Signature circuits. Both modules occupy one rail space in the fire alarm control cabinet and provide removable field wiring terminals to aid installation.

Innovative design gives the 3-SSDC1/3-SDDC1 and Signature devices truly "distributed intelligence". Signature detectors and modules have their own on-board microprocessor communicating with the loop controller in a fully digital communication format. This increases the accuracy of the information coming to and from the loop controller by reducing the effects of capacitance and noise.

With decentralized intelligence much of the decision making moves from the loop controller to the devices. Advanced fire detection algorithms processed within the Signature devices effectively end unwanted alarms. Environmental compensation and multiple sensing element decision making operations are resident in the devices. Intelligent devices allow the Signature Controllers to execute communication and system functions with greater speed and low baud rates, increasing the accuracy of information transmitted between the loop controller and devices.

Standard Features

- One or two circuit versions
- Dedicated microprocessor control
- Full digital communication
- Specialized communication protocol
  - Less sensitive to cable characteristics
  - Utilize existing wiring in most applications
- Loop alarm in under 750 milliseconds
- Device location supervision
  - Unexpected additional device addresses
  - Missing device addresses
  - Switched device locations
  - Programmed device parameters
- Automatic nonvolatile as-built mapping
  - Stores "actual" and "expected" device data
  - Stores physical connection sequence including "T" taps
- Automatic day/night sensitivity
- Supports up to 250 intelligent Signature detectors and 250 Intelligent Signature Modules
- Up to five 3-SDDC1s per node
  - Total of 10 Signature circuits
- Removable field wiring terminal blocks
- Multiple survival modes — stand alone
- Fully backward compatible with 3-SSDC and 3-SDDC
- Supports the full line of Signature II devices, including carbon monixide detection

Application

Up to 125 detectors and 125 modules are supported over a single pair of wires by the 3-SDC1 Signature Cards that plug into the Signature controller modules. Both Class A wiring (style 6 or style 7) and Class B (style 4) wiring are supported. Loop distances over 11,000 feet (3300m) are possible.

The 3-SSDC1 and 3-SDDC1 use advanced communication formats that provide exceptional response. Using a "BROADCAST POLL" the loop controller checks the entire device circuit for any changes of state. Should one or more devices report a change the 3-SSDC1/3-SDDC1 uses "DIRECT ADDRESS SEARCH" to find reporting device(s). Devices that have entered the alarm state or become active are located nearly instantaneously.

The unique use of "BROADCAST POLLING" combined with "DIRECT ADDRESS SEARCH" ensures that only new information is transmitted allowing a reduced baud rate with fast response time. The low baud rate is ideal for retrofit applications since in most applications existing wiring can be used.

To enhance survivability of the system the 3-SSDC1/3-SDDC1 supports a standalone mode for Signature devices. Two catastrophic failure modes are supported. If the 3-CPU(1/3) fails, the loop controller will continue to poll its devices. If an alarm is detected it will be sent on the local rail communication bus and received by other local rail modules. A common alarm condition throughout the panel will result. If the local rail module (3-SSDC1/3-SDDC1) fails, and a device (smoke or module) detects an alarm, specialized circuitry will make the node aware of the alarm condition. The 3-CPU(1/3) will communicate the alarm condition to the rest of the network. Having multiple redundant modes is paramount in a life safety system.

Every time the 3-SSDC1/3-SDDC1 communicates with a detector a green LED on the detector flashes. Normal green LED activity is not disturbing to building occupants, but can be quickly spotted by a maintenance technician. A red LED on the detector turns on only in the alarm condition.

The 3-SSDC1/3-SDDC1 also supervises the device wiring, physical location of each device and the programmed device characteristics. This Edwards/Signature Series unique characteristic is accomplished by "MAPPING" the Signature circuit and committing the map to memory. Upon power up the loop controller will scan device serial numbers and map their physical location sequence on the loop, including "T" taps. After mapping is complete the controller automatically addresses each detector and module through downloading over the loop. There are no switches or dials to set. Each device is assigned a unique soft address generated by the site specific program.

The 3-SSDC1/3-SDDC1 then compares the "Actual" physical device data to the "Expected" site specific program data. If any correlations are different, the loop controller issues a trouble to the CPU identifying the devices which do not match and posting a map fault. Through the 3-CPU3's RS-232 port a graphical map of the loop can be uploaded depicting each device's location on the loop, including branches (T-Taps) and all of the physical attributes associated with the device. This diagnostic information is unparalleled in the fire detection industry and vital for keeping accurate records on how the system was installed.

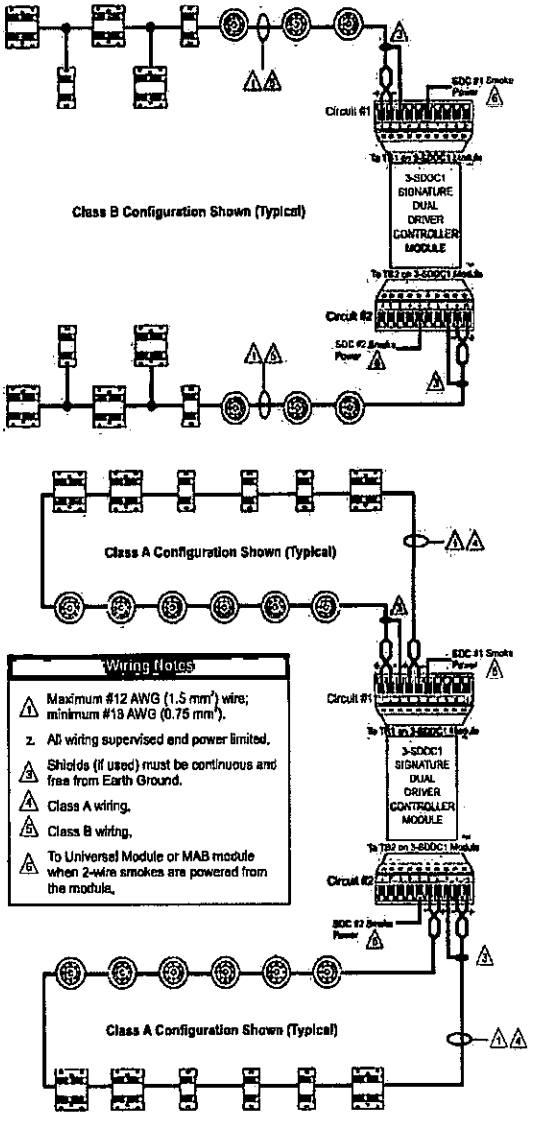
During installation a common problem with analog/ addressable systems is locating ground faults. The 3-SSDC1 and 3-SDDC1 controllers have the ability to locate ground faults by specific module, speeding up the troubleshooting process. Another significant advantage of the 3-SSDC1/3-SDDC1 controllers during commissioning is electronic addressing and mapping. This eliminates duplicate addresses, which are also very difficult for most systems to locate.

During maintenance, should groups of detector heads be removed for service and returned into the wrong smoke detector base (location), the 3-SSDC1/3-SDDC1 will automatically detect the problem. If the attributes of the switched devices are the same, the system will automatically download the correct soft addresses and algorithms to the devices (maintaining location supervision).

If the attributes are not the same the 3-SSDC1/3-SDDC1 will send a map fault indication to the 3-CPU3 and post a trouble indicating the specific devices in fault.

The 3-SSDC1/3-SDDC1 also monitors the Signature Series devices for maintenance and trouble conditions. Each smoke detector contains intelligence to adjust with environmental changes. This expands the amount of time required between cleaning while maintaining a constant alarm threshold. As the detector begins to exhaust the environmental compensation, and reaches the 80% level, the 3-SSDC1/3-SDDC1 will indicate a maintenance alert or dirty condition to the 3-CPU and indicate the specific device requiring cleaning. If cleaning is not performed the detector will continue to operate until all of its environmental compensation is

Typical Wiring



utilized. At this point the 3-SSDC1/3-SDDC1 sends a dirty trouble indication to the 3-CPU and posts a trouble condition. If maintenance is still not performed the Signature detector will automatically remove itself from service once the programmed threshold window has been breached (preventing a false alarm).

When a detector includes carbon monoxide (CO) detection, the detector monitors its CO life remaining for the CO sensor element and provides this information automatically to the panel. For maintenance of the system the CO life remaining is also available by simply running a maintenance report at the panel or through the FireWorks graphical interface. A unique CO maintenance signal is automatically generated by the panel when there is 8% (several months) of CO element life remaining. Should the CO sensor element not be replaced after the maintenance signal is reported, an "End of Life" trouble automatically posts on the panel when the CO sensor detection capability is exhausted.

Remote test capability permits devices to be put in alarm, pre-alarm, supervisory, monitor, or security alarm, or trouble from the panel menu or controls. This facilitates testing of smoke and heat detectors as well as monitor and security devices. Fast test is also provided for CO detectors allowing these devices to be tested quickly in the field.

The 3-SSDC1 and 3-SDDC1 local rail modules modules are fully backwards compatible with the 3-SSDC and 3-SDDC local rail modules. 3-SSDC1 and 3-SDDC1 modules provide additional onboard memory to facilitate future Synergy functions. To upgrade a 3-SSDC/3-SDDC to a 3-SSDC1/3-SDDC1 respectively, replace the 3-SSDC/3-SDDC Local Rail Module with a 3-SDDC1-MB Local Rail Module and reuse the 3-SDC Signature Device Cards and filters.

Specifications (Signature Circuits)

Charts assume wire and devices are evenly distributed over length of circuit

Non-twisted, non shielded wire

Device type	# of Detectors	# of Module Addresses	#14 AWG (20pf/foot) (2.53 Ohm/1000ft)	#16 AWG (20pf/foot) (4.02 Ohm/1000ft)	#18 AWG (20pf/foot) (6.38 Ohm/1000ft)
Detectors only	125	0	14,752 feet (4,497 meters)	9,275 feet (2,827 meters)	5,839 feet (1,780 meters)
Modules only	0	125	12,599 feet (3,840 meters)	7,921 feet (2,414 meters)	4,986 feet (1,520 meters)
Detectors and Modules	125	125	5,738 feet (1,749 meters)	3,608 feet (1,100 meters)	2,271 feet (692 meters)
Detectors and Modules with 2-wire smokes	63	55 + 9 SIGA-UM	7,623 feet (2,324 meters)	4,793 feet (1,461 meters)	3,017 feet (920 meters)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	3,798 feet (1,158 meters)	2,388 feet (728 meters)	1,503 feet (458 meters)

Twisted pair non shielded wire

Device Type	# of Detectors	# of Module Addresses	#14 AWG (38pf/foot) (2.53 Ohm/1000ft)	1.5mm² (36pf/foot) (3.75 Ohm/1000ft)	#16 AWG (36pf/foot) (4.02 Ohm/1000ft)	1.0mm² (25pf/foot) (5.51 Ohm/1000ft)	#18 AWG (25pf/foot) (6.38 Ohm/1000ft)
Detectors only	125	0	13,157 feet (4,010 m)	9,933 feet (3,028 m)	9,275 feet (2,827 m)	6,760 feet (2,061 m)	5,839 feet (1,780 m)
Modules Only	0	125	12,599 feet (3,840 m)	8,483 feet (2,586 m)	7,921 feet (2,414 m)	5,774 feet (1,760 m)	4,986 feet (1,520 m)
Detectors & Modules	125	125	5,738 feet (1,749 m)	3,864 feet (1,178 m)	3,608 feet (1,100 m)	2,630 feet (802 m)	2,271 feet (692 m)
Detectors and modules with 2-wire smokes	63	55 + 9 SIGA-UM	7,623 feet (2,324 m)	5,133 feet (1,565 m)	4,793 feet (1,461 m)	3,494 feet (1,065 m)	3,017 feet (920 m)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	3,798 feet (1,158 m)	2,558 feet (780 m)	2,388 feet (728 m)	1,741 feet (531 m)	1,503 feet (458 m)

Twisted pair shielded wire

Device Type	# of Detectors	# of Module Addresses	#14 AWG (84pf/foot) (2.53 Ohm/1,000ft)	#16 AWG (82pf/foot) (4.02 Ohm/1,000ft)	#18 AWG (58pf/foot) (6.38 Ohm/1,000ft)
Detectors only	125	0	5,952 feet (1,814 meters)	6,098 feet (1,859 meters)	5,839 feet (1,780 meters)
Modules Only	0	125	5,952 feet (1,814 meters)	6,098 feet (1,859 meters)	4,986 feet (1,520 meters)
Detectors & Modules	125	125	5,738 feet (1,749 meters)	3,608 feet (1,100 meters)	2,271 feet (692 meters)
Detectors and modules with 2-wire smokes	63	55 + 9 SIGA-UM	5,952 feet (1,814 meters)	4,793 feet (1,461 meters)	3,017 feet (920 meters)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	2,558 feet (780 meters)	2,388 feet (728 meters)	1,503 feet (458 meters)

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Engineering Specification

The communication format between the control panel and analog devices shall be 100% digital.

Loop alarm recognition must be within 750 milliseconds of a device going into the alarm state, with system response time no greater than 3 seconds. All devices shall support remote testing.

It must be possible to wire the circuit as Class A or Class B with non-shielded, non-twisted wire. It must be possible to wire branches (T-taps) with Class B wiring.

The driver controller must be manufactured in accordance with ISO 9001 standards.

The system must have tolerance to multiple failures. There must be a standalone mode of operation that will ensure the system is aware of alarms even if the local rail or main CPU fails.

Specifications (controllers)

Catalog Number	**3-SSDC1**	**3-SDDC1**
Installation	1 LRM Space	1 LRM Space
Module Configuration	1 Addressable circuit (3-SDC1 Card) expandable to 2 circuits.	2 Addressable circuits (3-SDC1 Cards)
Operating Current [Note 2]	Standby 144 mA Alarm 204 mA	Standby 264 mA Alarm 336 mA
Operating Voltage	24 Vdc, Nominal	
Address Requirements	Automatic	
Detectors Supported	125 per 3-SDC1 Card	
Modules Supported	125 Module Addresses per 3-SDC1 Card	
2-Wire Smoke Power Output	100 mA per 3-SDC1 Card (not included in *Operating Current* above	
Conventional detectors supported	150 of 100 µA type per circuit.	
Signature Circuit Voltage	20 VDC +/- 5%	
Maximum Signature Circuit Resistance	100 Ohms	
Maximum Signature Circuit Capacitance	0.33 µF	
Communications Format	100% Digital.	
Circuit Wiring Styles	Class A or Class B	
Termination	Removable plug-in terminal strip(s) on module	
Permissable Wire Size	18 to 12 AWG (0.75 to 2.5 mm²)	
Agency Listings	UL, ULC, CE (see Note 1), LPCB EN54 (see Note 3).	
Operating Environment	32 °F (0 °C) to 120 °F (49 °C) 93% RH, non-condensing	

Note 1: Other EST3 components are modularly listed under the following standards:
UL 864 categories: UOJZ, UOXX, UUKL and SYZV, UL 294 category ALVY, UL 609 category AOTX, UL 636 category ANET, UL 1076 category APOU, UL 365 category APAW, UL 1610 category AMCX, UL 1635 category AMCX
ULC-S527, ULC-S301, ULC-S302, ULC-S303, ULC-S306, ULC/ORD-C1076, ULC/ORD-C693
Please refer to EST3 Installation and Service Manual for complete system requirements.

Note 2: Current shown includes full loop of devices.

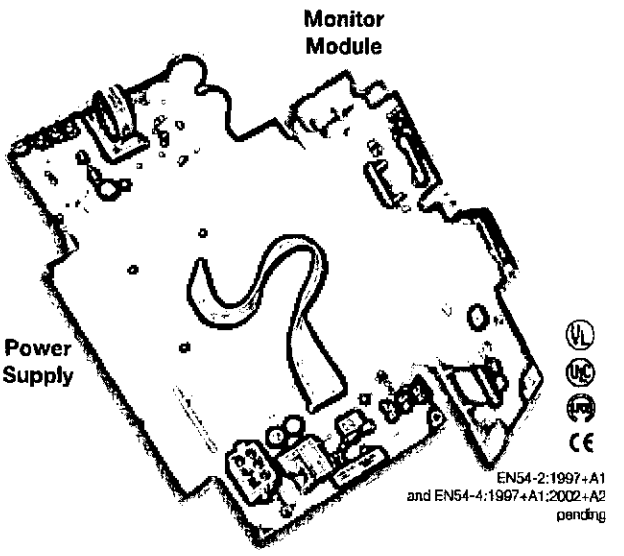
Note 3: EN54-2:1997+A1: 2006 and EN54-4:1997+2002 +A2 : 2006 (verify device and loop controller compatibility)

Ordering Information

Catalog Number	**Description**	**Shipping Wt. lb (kg)**
3-SSDC1	Single Signature Driver Controller. Comes with one 3-SDC1 Device Card. Mounts to Local Rail. *Add suffix "-E" for EN54 compliant versions.*	0.5 (0.23)
3-SDDC1	Dual Signature Driver Controller. Comes with two 3-SDC1s. Mounts to Local Rail. *Add suffix "-E" for EN54 compliant versions.*	0.5 (0.23)
3-SDC1	Signature Device Card - upgrades a 3-SSDC1 to a 3-SDDC1	0.25 (0.11)
3-FP	Filler Plate, order separately when no LED or LED/Switch module installed.	0.1 (0.05)

EST3 Power Supplies

3-PPS/M series, 3-BPS/M series, 3-BBC/M series



EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending

Overview

EST3 Power supplies consist of two assemblies, a high efficiency switch mode power supply card and a power supply monitor module. The monitor module mounts to the local rail and distributes the power from its supply to the local rail. The local rail distributes power from all power supplies to other local rail modules and user interface cards resulting in "Shared Power" throughout the system. By paralleling the power supplies on a rail maximum utilization of available power is possible, resulting in fewer power supplies. Up to four power supplies combine in a single enclosure providing up to 28 amps of available power. Battery backup is provided using from one to four sets of batteries, depending on standby power requirements.

Power supplies mount to the back of the chassis units or wall-boxes. The associated power supply monitor module mounts on the local rail providing system power distribution and mounting space for any control display module. Access to auxiliary power is via easily accessible terminal blocks located on the power supply monitor module. Each power supply produces 7 Amps of filtered and regulated power. With four power supplies located in an enclosure (one primary and three booster power supplies) 28 amps of current is available for local rail modules, control display modules and the eight auxiliary 3.5 amp power outputs (two per supply).

Standard Features

- High efficiency switch mode
- Increased power distribution efficiency
  - power supplies parallel allowing up to 28 amps in a single node
- 120 or 230 Vac operation
- 7 AMP filtered and regulated
- Two 3.5 AMP outputs
- Temperature compensated, dual rated battery charger
- Electronic power limiting
- Automatic load testing of batteries

Application

The primary power supply provides the system with battery charging and voltage regulation. Software configures the charger to either 10-24 AH batteries or 30-65 AH batteries and controls the high/low charge rates. Batteries mounted in the same enclosure as the power supply, have their charge rate monitored and adjusted based on the local enclosure temperature, keeping charging rates within battery specification. For remote batteries a temperature probe is monitored in the remote battery cabinet and charge rates are adjusted automatically. Battery damage is unlikely to occur when environmental short term conditions are outside of normal operating ranges.

The EST3 power supplies automatically load test batteries by shutting down the battery charger and placing a load across the battery. If the battery voltage is outside the specification range the power supply reports a trouble. The trouble clears if the battery is able to recover and pass future load tests.

Battery leads are electronically short circuit protected. If a short occurs in the battery leads the charger automatically disables itself and causes a trouble. The system will constantly look to see if the short has cleared. If the short clears the system automatically restores.

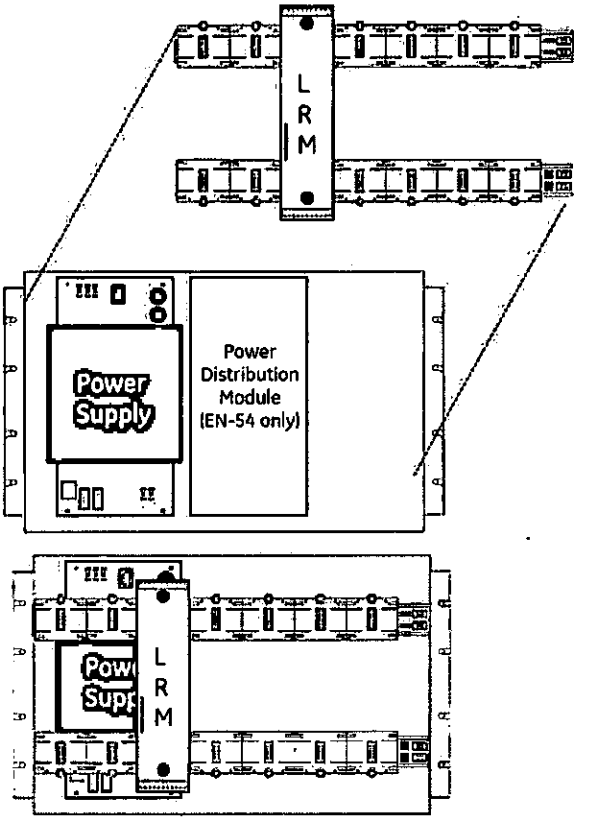
During operation on standby batteries, battery voltage is constantly monitored. A trouble is reported if the battery voltage falls below a specified value.

EST3 power supplies provide specific information back to the 3-CPU(1) designed to help speed trouble shooting of system functions. Should a power supply detect a fault, specific diagnostic codes are available to speed trouble shooting. The 3-LCD will display the power supplies address, a specific trouble code, and a text message describing the specific trouble. Text messages are easy to understand and include items like: Battery Trouble, Aux Power Overload Circuit 1, Aux Power Overload Circuit 2.

Engineering Specification

The fire alarm power supplies must be capable of being paralleled and to load share. Multiple power supplies must be capable of being backed up with a single 24 volt battery set. Each power supply shall be capable of charging up to 65 AH batteries. The power supply must be able to perform an automatic load test of batteries and return a trouble if the batteries fall outside a predetermined range. Power supplies must incorporate the ability to adjust the charge rate of batteries based on ambient temperatures. It shall be possible to adjust for ambient temperature changes in local cabinets as well as remote cabinets.

Installation and Mounting



Power Supply Rules

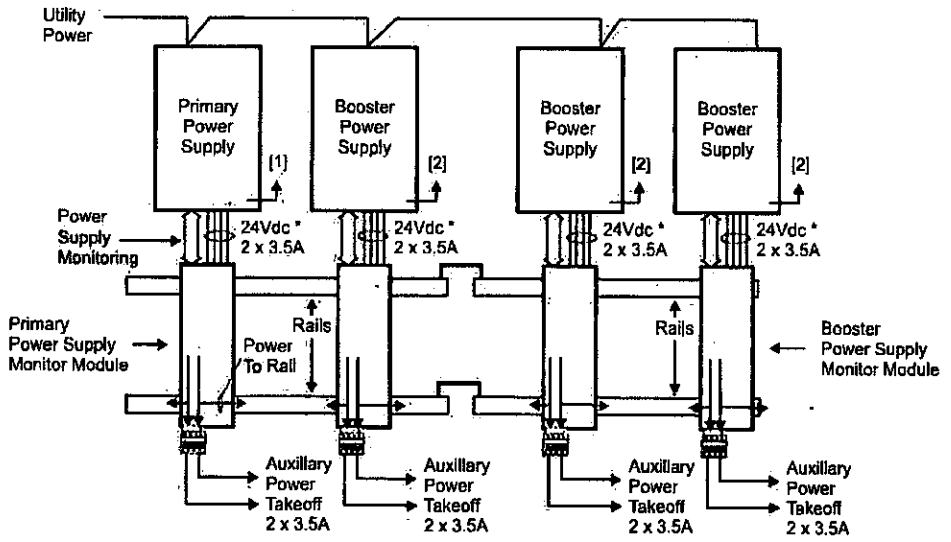
1. Each battery set needs one charger, either a 3-PPS/M or a 3-BBC/M.
2. Each power supply must be connected to a battery set using an identical length and gauge of wire to keep voltage drops identical.
3. Distribute power supplies and loads evenly across rails.
4. **All battery sets for a panel must be the same capacity (AH), same manufacturer, and same manufacturing date code.**

The Table below illustrates the combinations of power supplies and batteries that meet all the power supply rules.

24 VDC Power Supply Output Current

	7A	14A		21A		28A	
Battery Requirements	One Set, 65 AH max	One Set, 65 AH max	Two Identical Sets, 65 AH max	One Set, 65 AH max	Three Identical Sets, 65 AH max	One Set, 65 AH max	Four Identical Sets, 65 AH max
Required Modules	1 3-PPS/M	1 3-PPS/M 1 3-BPS/M	1 3-PPS/M 1 3-BBC/M	1 3-PPS/M 2 3-BPS/M	1 3-PPS/M 2 3-BBC/M	1 3-PPS/M 3 3-BPS/M	1 3-PPS/M 3 3-BBC/M

Typical Wiring



[1] From battery temperature probe terminals.

[2] From battery and from temperature probe terminals if 3-BTSEN-E used.

* Nominal Voltage

Specifications

Catalog Number	3-PPS/M & 3-BBC/M	3-BPS/M	3-PPS/M-230 & 3-BBC/M-230	3-BPS/M-230	3-PPS/M-230-E & 3-BBC/M-230-E	3-BPS/M-230-E
Agency Approvals	UL, ULC	U L, ULC	UL, ULC	UL, ULC	LPCB EN54*, CE	EN54*
Input Voltage	120 Vac (+10%, -15%), 50-60 Hz		230 Vac (+10%, -15%), 50-60 Hz			
Brownout Level	< or = 102 Vac	96 Vac	< or = 195 Vac	184 Vac	< or = 195 Vac	188 Vac
Current Requirements	3-PPS/M included with 3-CPU3 current 3-BBC/M Alarm: 70 mA Standby: 70 mA	Alarm 50mA Standby 50mA	3-PPS/M-230 included with 3-CPU3 current 3-BBC/M-230 Alarm: 70 mA Standby: 70 mA	Alarm: 50 mA Standby: 50 mA	3-PPS/M-230-E included with 3-CPU3 current 3-BBC/M-230-E Alarm: 70 mA Standby: 70 mA	Alarm: 50 mA Standby: 50 mA
Input Current	3.0 A		1.5 A			
Total Output Current	Special Applications: 7.0 Amps					
Battery Charging Capacity	65 AH Sealed Lead-Acid	None	65 AH Sealed Lead-Acid	None	30 AH Sealed Lead-Acid	None
Low Battery Trouble	24 Vdc				22.5 Vdc	
Deep Discharge Cutoff	19.5 Vdc				20.0 Vdc	
Mounting Requirements	1 LRM space, 1 chassis footprint				1 LRM Space + 3-PPS: 2 footprints 3-BBC: 1 footprint	1 LRM space, 1 chassis footprint
Output Voltage	24 Vdc Nominal					
Auxiliary Output Current	Two sources of 3.5 Amps each taken from total output current					
Auxiliary Output Terminal Capacity	18 AWG to 12 AWG (1 mm² to 2.5 mm²)					
Output Protection	Electronic power limiting & heat sink temperature					
Ground Fault Detection	< 10K Ohms					

*EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending

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Ordering Information

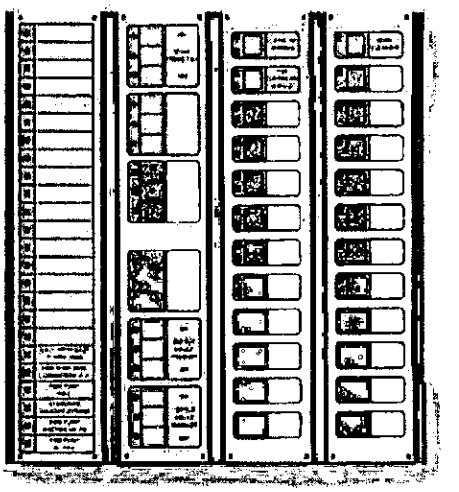
Catalog Number	Description	Ship Wt., lb. (kg)
3-PPS/M	Primary Power Supply w/ local rail module 120V 50/60 Hz	.5 (2.3)
3-BPS/M	Booster Power Supply w/ local rail module 120V 50/60 Hz	.5 (2.3)
3-PPS/M-230	Primary Power Supply w/ local rail module 230V 50/60 Hz	5 (2.3)
3-BPS/M-230	Booster Power Supply w/ local rail module 230V 50/60 Hz	5 (2.3)
3-PPS/ M-230-E	Primary Power Supply w/local rail module 230V 50 Hz, EN54* Certified, CE	5 (2.3)
3-BPS/ M-230-E	Booster Power Supply w/local rail module 230V 50 Hz, EN54* Certified, CE	5 (2.3)
3-BBC/M	Booster/Charger Supply w/local rail module 120V 50/60Hz	5 (2.3)
3-BBC/M-230	Booster/Charger Supply w/local rail module 230V 50/60Hz	5 (2.3)
3-BBC/ M-230-E	Booster/Charger Supply w/local rail module, 230V 50/60Hz, EN54* Certified, CE	5 (2.3)
3-BBCMON(-E)	Booster/Charger Monitor Module with charger capability (upgrade 3-BPS/M(-230)(-E) to 3-BBC/M-(230)(-E))	5 (2.3)
3-BTSEN	Distribution Module required when battery installed in remote cabinet	.5 (.22)
3-BTSEN-E	Distribution and Temperature Sensor Module. Required in EN54* Markets when battery installed in a remote cabinet.	.5 (.22)
3-FP	Filler Plate, order separately when no LED or LED/Switch module installed.	0.1 (0.05)

*EN54-2:1997+A1, and EN54-4:1997+A1:2002+A2 pending

EST™
Life Safety & Communications

Control Display Modules

3-LDSM, 3-24x series, 3-12xx series, 3-6/3S1xxx series



Overview

The EST3 Control Display modules provide the emergency user with the simplest of interfaces, lights and switch control. The Control Display modules install over local rail modules. The local rail modules supply the power and drivers via a ribbon cable connection to the control display modules. The displays mount over any local rail module maximizing the flexibility of design layout. When a display module is required where no local rail module exists, an LED Display Support Module 3-LDSM mounts to the local rail providing support for one Control Display Module.

Surface mount technology used to minimize space, also reduces the power requirements of display modules. Slide-in labels keep the control display modules flexible and allow labeling for local languages.

Module lamp test can be programmed to any spare control switch or a local node lamp test is initiated by simultaneously operating the Alarm Silence and Trouble Silence switches on the 3-CPU.

Standard Features

- Programmable LED flash rates
- Membrane style tactile pushbuttons
- Software supported for toggle, and latching interlock switch action
- Slide in labels
- Lamp test

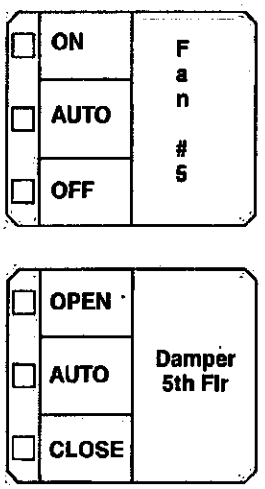
45

Application Notes

Control Display Modules come in a variety of types providing operational flexibility. There are five types of display modules available with EST3.

Typically alarm zone annunciation appears on any of the first four module types shown. The first module supports simple zone annunciation; the second, zone annunciation with zone disable; the third, alarm and trouble zone annunciation, the fourth alarm and trouble zone annunciation with zone disable. From a simple one LED annunciation point to higher functionality, EST3 fills the requirements.

Simple Control Examples



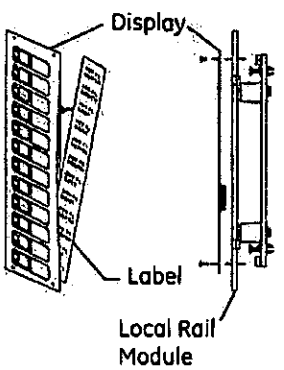
The fifth module is very adaptable to system requirements for audio or remote equipment control. Each module contains 18 LEDs and 18 switches. Each group of three switches has a latching-interlock to support operations that must be kept separated. The interlock is under software control so only one switch is active at a given time. EST3 software makes meeting the wide variety of applications needed with today's codes and building system operations easy.

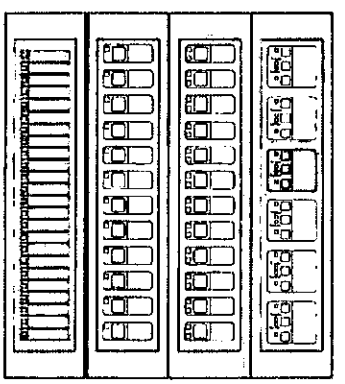
For fan control the emergency user assumes control of the remote device by selecting "On" or "Off." Programming of the switches to multiple relays keeps operational design choices open. The user returns the system control of the remote device to the Life Safety system by simply pressing Auto. The Auto LED programs to its related switch and gives positive feed back to the user by turning on yellow when the system has active control of remote devices.

Individual switch LEDs are also programmable. As an example the "Open" or "On" LED (green) could program to follow its related switch or, program to follow a remote monitor input and provide positive feedback of the remote devices control status. If budget restrictions prevent "sail type" positive feedback, EST's unique command processing satisfy requirements for positive feedback of HVAC control systems. Any switch command will send a signal to the 3-CPU for processing. While in this state the LED associated with the switch will flash. Once the command has been received by a remote Signature Series Module, the module (since it is intelligent with its own microprocessor) will issue a "Processed" command back to the 3-CPU which will latch the LED associated with the switch "ON" steady. This same process is used for all audio speaker selections ensuring the circuit is connected. A variety of switch and associated LED colors are available to meet the demands of the specifiers application.

Life Safety Systems are generally passive requiring only occasional operation. Yet, in an emergency the user must be able to identify system operation and status quickly and easily. LCD displays are excellent for identifying specific information, but even a large LCD can not display overall "system" status as effectively as LEDs and Switches. The EST3 Control Display modules are designed to provide simple identification and operation of system functions for the emergency user. They provide positive feedback of control activity with unrivaled selection of display configurations and mounting location options.

Installation and Mounting



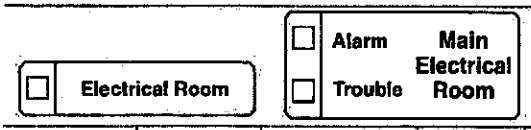


Engineering Specification

The Life Safety system shall incorporate annunciation of Alarm, Supervisory, Trouble and Monitor operations. Annunciation must be through the use of LED display strips complete with a means to custom label each LED as to its function. Where applicable control of remote smoke control devices must be made available at the control center. Switches with LEDs must provide positive feed back to the operator of remote equipment status. Where voice audio is required a means of paging individual zones must be made. The status of each paging zone must be annunciated. It must be possible to selectively page into specific zones. It shall be possible to manipulate the evacuation of the building from the main control center. It must be possible for the emergency operator to put specific zones into evacuation manually.

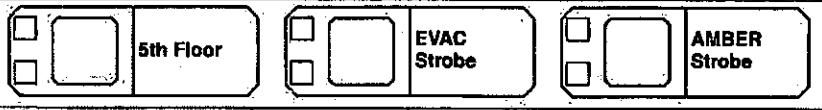
Technical Specifications

Catalog Number	Number of LEDs	LED Colors	Switches	Applications	Alarm Current
3-LDSM	N/A	N/A	N/A	Provides interface for one Control Display Module	5 mA

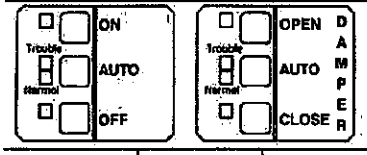


3-24R	24	red	0	Alarm Annunciation	2 mA base + 1.5 mA per active LED
3-24Y		yellow		Supervisory and Trouble Annunciation	
3-24G		green		Monitor Annunciation	
3-12RY		12 red over 12 yellow pairs		Red LEDs Alarm Annunciation Yellow LEDs Supervisory Annunciation	

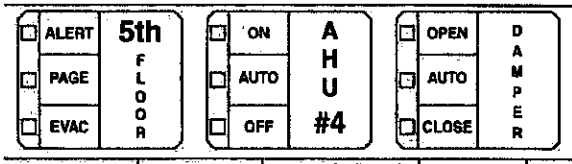
3-12SR	12	red	12	Alarm Annunciation with enable/disable operation	2 mA base + 1.5 mA per active LED
3-12SY		yellow		Supervisory Annunciation with enable/disable operation	
3-12SG		green		Monitor Annunciation, Page select	



3-12/S1GY	12 groups of two w/ switch	green/ yellow	12	Zone Page select with Trouble Annunciation	2 mA base + 1.5 mA per active LED
3-12/S1RY		red/yellow		Alarm and Trouble Annunciation with enable/disable	
3-12/S2Y		yellow/ yellow		Supervisory and Trouble Annunciation with enable/disable	



3-4/3SGYWR	4 LEDs	Green /Yellow and White/Red	1 2 3 switches	On-Auto-Off fan and Open-Auto-Close Damper Control with Trouble and Normal LED indicators	2mA base + 1.5mA per active LED



3-6/3S1G2Y	6 groups of 3 w/switch	green/yellow / yellow	Six groups of three	On-Auto-Off fan and Open-Auto-Close Damper Control	2 mA base + 1.5 mA per active LED
3-6/3S1GYR		green/yellow / red		Page and Evacuation select with zone trouble	

Notes:

1) All Control Display Modules are UL and ULC listed.

2) All Control Display Modules mount over one Local Rail Module. If no local rail module exists the 3-LDSM mounts to local rail and supports one control display module.

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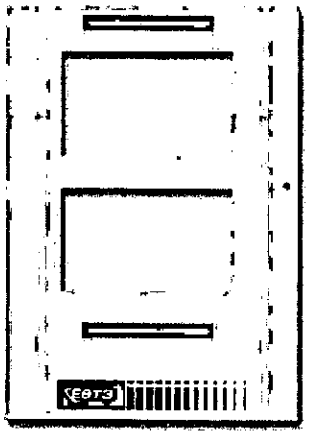
Ordering Information

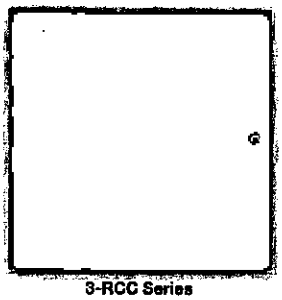
Catalog Number	Description	Shipping Weight
3-LDSM	LED Display Support Module	0.45lb (.2kg)
3-24R	24 Red LED Display Module	
3-24Y	24 Yellow LED Display Module	
3-24G	24 Green LED Display Module	
3-12SR	12 switches with 12 Red LED Display/Control Module	
3-12SY	12 switches with 12 Yellow LED Display/Control Module	
3-12SG	12 switches with 12 Green LED Display/Control Module	
3-12RY	12 Red LED and 12 Yellow LED Display Module	
3-12/S1GY	12 switches with one Green and one Yellow LED per switch Display/ Control Module	
3-12/S1RY	12 switches with one Red and one Yellow LED per switch Display/ Control Module	0.35lb (.12kg)
3-12/S2Y	12 switches with two Yellow LEDs per switch Display/Control Module	
3-6/3S1G2Y	Six groups of three switches. Each switch with one LED. LEDs provided Green, Yellow, Yellow.	
3-4/3SGYWR	12 switches in four groups of three switches, switch one with a green LED, switch two with yellow and white LEDs and switch three with a red LED	
3-6/3S1GYR	Six groups of three switches. Each switch with one LED. LEDs provided Green, Yellow, Red	

Life Safety & Communications

EST3 Cabinets and Chassis

3-CAB series, 3-RCC series, 3-CHAS7 series, BC-1





EN54-2:1997+A1 and
EN54-4:1997+A1:2002+A2 pending

Overview

EST3 has a wide selection of cabinet arrangements allowing the greatest use of EST3's flexible modular design. Lobby enclosure wallboxes are manufactured from #14 AWG cold rolled steel with a gray baked enamel finish. Lobby enclosure doors are manufactured from #14 AWG cold rolled steel and have a modern contoured door design with integral viewing window. The exception is the small lobby enclosure 3-CAB5. The 3-CAB5 wallbox and non-contoured door are #16 AWG cold rolled steel. Lobby enclosure doors come with gray baked enamel or optional red baked enamel finishes. The EST3 lobby enclosures back boxes, doors and chassis units are ordered and shipped separately. The 3-CAB5 lobby enclosure comes complete with door and back box providing space to mount five local rail modules.

The EST3 remote closet cabinet design allows the installation of control panel electronics in electrical closets. The remote closet cabinets have left hand hinged doors and are available with red finish only. Optional display modules used for system diagnostics display, mount behind the closet cabinet door and are not visible with the door closed.

Standard Features

- Right or left hand hinging of doors
- Lag and Keyway holes for quick mounting
- Attack rated door for security applications
- Knockouts for 3/4 inch conduit
- Attractive contour door design on lobby enclosures
- Combination flush or surface mounting lobby enclosure design
- Remote closet cabinets for electrical closet mounting support up to 65 AMP hour batteries
- Optional earthquake hardening: OSHPD seismic pre-approval for component Importance Factor 1.5

Application

Lobby Enclosures

EST3 lobby enclosures provide space for control, monitoring and display modules where they remain visible even with the door closed and secure. Ideal for mounting in lobby's where appearance is important, maximum mounting flexibility is provided with doors that will mount for right or left hand opening. Lobby enclosures come in several sizes to match individual project requirements.

The **3-CAB5 series** semi-flush or surface mounts. A built in rail assembly provides space for up to five local rail modules, no chassis assembly needed. Back space for 1-1/2 footprints gives room for a power supply and a 1/2 footprint module and 10 AH batteries. The local rail module spaces provide room for amplifiers, common control and annunciation modules.

The **3-CAB7** semi-flush or surface mounts and has a contoured front door with viewing window. Space is provided for two 17 AH batteries and one chassis assembly providing seven local rail module spaces.

The **3-CAB14** semi-flush or surface mounting and has a contoured front door with viewing window. Space is provided for two 17AH batteries and two chassis assemblies each providing seven local rail module spaces.

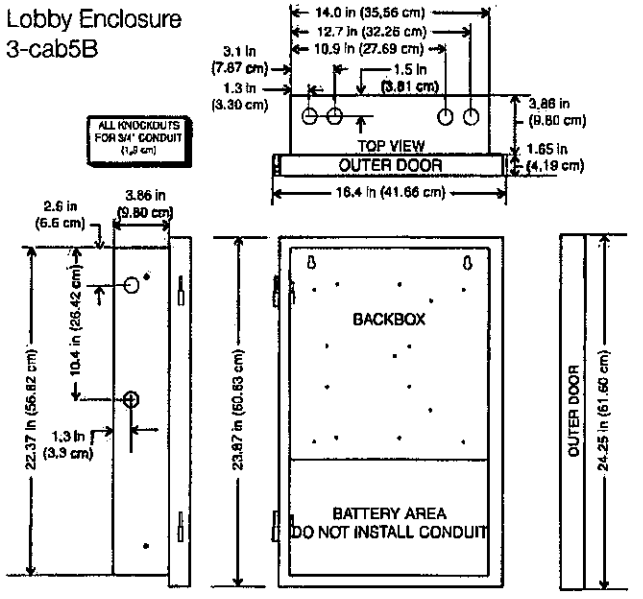
The **3-CAB21** semi-flush or surface mounts and has a contoured front door with viewing window. Space is provided for two 17AH batteries and three chassis assemblies each providing seven local rail module spaces.

Remote Closet Cabinets

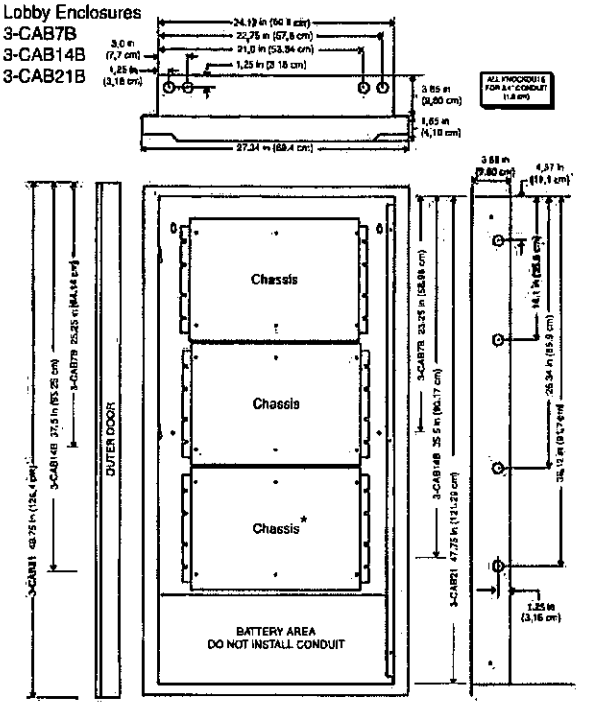
Remote closet cabinets provide an economical way of installing equipment in locations where esthetics are not paramount, like electrical closets. You can have optional display modules used for system diagnostics display mounted behind the front door. These display modules will not be visible with the door closed. Remote closet cabinets are surface mounting and come in sizes providing space for one to three chassis with room for standby batteries. A UL Listed attack rated door having a 2-minute rating is available for the 3-RCC7R cabinet. This door is required for security applications.

Installation and Mounting

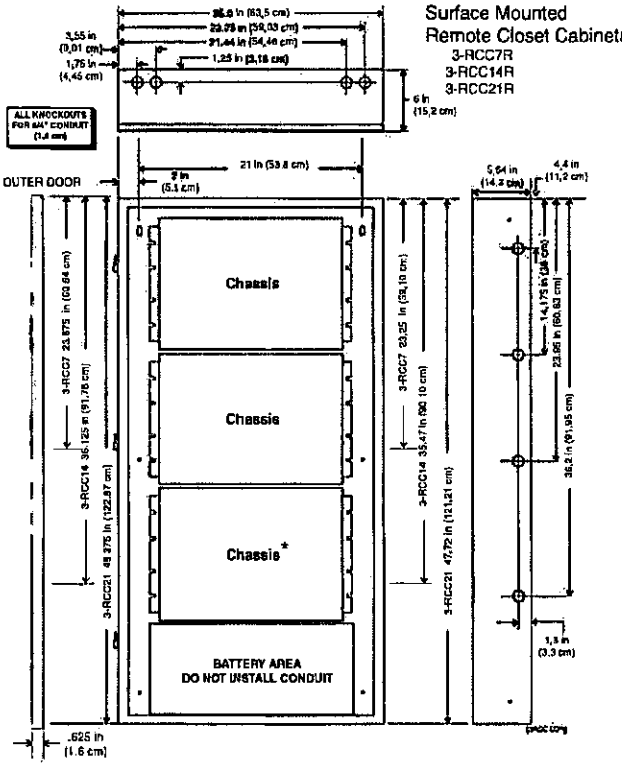
Lobby Enclosure
3-cab5B



Lobby Enclosures
3-CAB7B
3-CAB14B
3-CAB21B

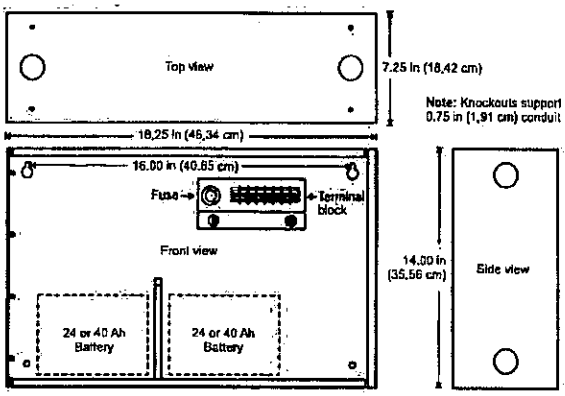


Surface Mounted
Remote Closet Cabinets
3-RCC7R
3-RCC14R
3-RCC21R



* The lower mounting space can be used for an MN-BRKT1 bracket, which holds MNEC interface equipment including an MN-NETSW1 Ethernet network switch, an MN-ABPM Audio bridge, an MN-FVPN VoIP module, and an MN-COM1S Communications module.

BC-1 Dimensions



Ordering Information

Catalog Number	Description	Equipment Mounting Space	Battery Space	Ship Wt. lb. (Kg)
Lobby Enclosures — Outer doors with viewing window				
3-CAB5	Cabinet w/Wallbox, door and chassis	Five local rail modules One footprint and ½ footprint module	Two - 12V10A	30 (13.6)
3-CAB7B	Wallbox only	One Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	30 (13.6)
3-CAB7B-E	Wallbox only, EN54* certified CE	1 Chassis		30 (13.6)
3-CAB7D(R)	Inner and outer doors for 3-CAB7B	N/A		10 (4.5)
3-CAB7D(R)-E	Inner & outer doors for 3-CAB7B, EN54*, CE			10 (4.5)
3-CAB14B	Wallbox only	Two Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	42 (19.1)
3-CAB14B-E	Wallbox only, EN54* certified CE	2 Chassis		42 (19.1)
3-CAB14D(R)	Inner and outer doors for 3-CAB14B	N/A		15 (6.8)
3-CAB14D(R)-E	Inner & outer doors for 3-CAB14B, EN54*, CE			15 (6.8)
3-CAB21B	Wallbox only	Three Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	55 (25)
3-CAB21B-E	Wallbox only, EN54* certified CE	3 Chassis		55 (25)
3-CAB21D(R)	Inner and outer doors for 3-CAB21B	N/A		20 (9.1)
3-CAB21D(R)-E	Inner & outer doors for 3-CAB21B, EN54*, CE			20 (9.1)
Remote Closet Enclosure — No viewing window				
3-RCC7R	Red wallbox and door	One Chassis	Four - 6V8A, Two - 12V10A Two - 12V17A, Two - 12V50A	37.5 (17)
3-RCC7R-E	Red wallbox and door, EN54* certified CE			37.5 (17)
ATCK	Attack rated door for 3-RCC7R	N/A		26 (11.8)
3-RCC14R	Red wallbox and door	Two Chassis	Four - 6V8A Two - 12V10A, Two - 12V17A Two - 12V50A, Two - 12V65²	53 (24)
3-RCC14R-E	Red wallbox and door, EN54* certified CE			53(24)
3-RCC21R	Red wallbox and door	Three Chassis		70 (31.8)
3-RCC21R-E	Red wallbox and door, EN54* certified CE			70 (31.8)
Chassis Assemblies				
3-CHAS7	Takes one chassis space in wallbox, provides space for 7 local rail modules, up to two power supplies, and a ½ footprint module.			8.4 (3.8)
3-ASU**	Takes one chassis space in wallbox, provides an audio source unit /w microphone and an inner door filler plate.			15 (6.8)
3-ASU/4**	Takes one chassis space in wallbox, provides an audio source unit /w microphone and four local rail module spaces.			15 (6.8)
3-ASU/FT**	Takes one chassis space in wallbox, provides an audio source unit /w microphone and Firefighters Telephone.			20 (9.1)
3-FTCU**	Takes one chassis space in wallbox, provides Firefighters Telephone Control unit and inner door filler plate.			15 (6.8)
MN-BRKT1	Takes one chassis space in wallbox, provides mounting for MNEC interface equipment			4.0 (1.8)
FSB-BRKT	Mounting bracket for FSB-PC communications bridge. Allows FSB-PC to mount on the side of a Chass7			1.0 (0.45)

more...

Notes:

1. All lobby enclosures, wallboxes and doors have a textured gray enamel finish; outer doors are available in red by adding the suffix "R" to the catalog number, i.e. 3-CAB7DR.
2. Remote closet cabinets will support 65 AH batteries with the use of the 3-BATS Battery Shelf, which reduces the enclosure's chassis capacity by one chassis.
3. The EST3 is modularly listed under the following standards: UL 864 categories: UOJZ, UOXX, UUKL and SYZV, UL 2572, UL 294 category ALVY, UL 609 category AOTX, UL 636 category ANET, UL 1076 category APOU, UL 365 category APAW, UL 1610 category AMCX, UL 1635 category AMCX ULC-S527, ULC-S301, ULC-S302, ULC-S303, ULC-S305, ULC/ORD-C1076, ULC/ORD-C693
   Please refer to EST3 Installation and Service Manual for complete system requirements.

** EN54-2:1997+A1 and EN54-4:1997+A1:2002+A2 pending*

*** Add "-GC" for City of Chicago.*

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Accessories

3-BATS	Battery Shelf for RCC Enclosures. Takes one chassis space. Room for up to one 65 AH or two 50 AH batteries.	3 (1.36)
BC-1	Battery Cabinet - supports up to two 40 amp hour batteries.	
3-BTSEN	Battery sensor/distribution module	0.5 (.2)
BC-1EQ	BC-1 - Seismic Battery hold down for BC-1. Supports up to two 40 Ahr batteries. Order BC-1 Separately.	
3-CABEQ	3-CAB - Seismic Battery hold-down for 3-CAB 7, 14 or 21. Supports two 12V batteries from 10 Ah up to 18 Ah. Comes with EST3 Chassis hardening hardware and instructions. Order 3-CAB7, 3-CAB14 or 3-CAB21 separately. See note 1.	
3-RCCEQ50	3-RCC series - Seismic Battery hold-down. Supports one set of two 50 Ah batteries. Comes with EST3 Chassis hardening hardware and instructions. Order 3-RCCxxR separately. See note 1.	
3-RCCEQ65	3-RCC series cabinet - Seismic Battery hold-down. Supports one set of two 65 Ah batteries (one battery in bottom of cabinet, one battery mounted on 3-BATS). Order 3-RCCxxR cabinet and 3-BATS separately. See note 1.	
3-TAMP	Tamper switch for 3-CAB7, 3-CAB14 and 3-CAB21 cabinets. Mounts to side of cabinet.	0.5 (.2)
3-TAMP5	Tamper switch for 3-CAB5. Mounts to side of cabinet.	0.5 (.2)
3-TAMPRCC	3-TAMPRCC Tamper Switch for RCC series cabinets. Mounts to side of cabinet.	0.5 (.2)

1. For earthquake anchorage, including detailed mounting weights and center of gravity detail, please refer to *Seismic Application Guide 3101676*. Approval of panel anchorage to site structure may require local AHJ, structural, or civil engineer review.

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).

Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Enter project information in the TAN Boxes

					Point to Point Method			**End of Line Method**			**Load Centering Method**		
Project Name	COLT GHAA EXPANSION				**CIRCUIT IS WITHIN LIMITS**			**CIRCUIT IS WITHIN LIMITS**			**CIRCUIT IS WITHIN LIMITS**		
Date	4/9/2014												
Circuit Number	1				Totals		Voltage	Totals		Voltage	Totals		Voltage
Area Covered	2ND FLR NORTH				Current	Distance	Drop	Current	Distance	Drop	Current	Distance	Drop
Nominal System Voltage		19.6	EST2=19.8	BPS=19.1	1.089	301	**0.91**	1.089	301	**2.013**	1.089	301	**1.006**
Minimum Device Voltage		16	EST3=19.2	APS=19.6	End of Line Voltage		**18.69**	End of Line Voltage		**17.59**	End of Line Voltage		**18.59**
Total Circuit Current	1.089		Wire Gauge	Ohm's Per 1000	Percent Drop		4.62%	Percent Drop		10.27%	Percent Drop		5.13%
Distance from source to 1st device		50	14	3.07	End of Line and Load Centering Methods use only the wire guage for the first device to source								
Wire Gauge for balance of circuit			14	3.07	Standard Wire Resistance in Ohms per 1000 feet.								
					18=7.77 16=4.89 14=3.07 12=1.98 10=1.24								
					18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors								

Enter current in amps. .129 = 129 ma		Distance from	Voltage		
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
Device 1	0.096	0	19.60	0.000	0.00%
Device 2	0.096	35	19.39	0.213	1.09%
Device 3	0.096	51	19.11	0.494	2.52%
Device 4	0.239	24	18.99	0.612	3.12%
Device 5	0.130	24	18.90	0.695	3.55%
Device 6	0.130	42	18.79	0.807	4.11%
Device 7	0.096	32	18.73	0.866	4.42%
Device 8	0.103	20	18.71	0.891	4.55%
Device 9	0.103	23	18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
END			18.69	0.906	4.62%
Totals	1.089	301	End of Line Voltage		**18.69**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then the manufactures listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Genesis Horn Strobe and Speaker Strobe		
	Candela	Current @Rated Voltage
Genesis Horn Stobe at High dB 16 VDC	15	0.129
	1575	0.176
	30	0.167
	75	0.281
	110	0.337
Genesis Speaker Strobe at 16 VDC	15	0.096
	1575	0.106
	30	0.130
	75	0.239
	110	0.294

Genesis Strobe Only		
Model #	Candela	Current @Rated Voltage
Genesis Strobe at 16 VDC	15	0.103
	1575	0.152
	30	0.141
	75	0.255
	110	0.311
High Candela Model at 16 VDC Note: Ceiling model can be wall mounted	15	0.109
	30	0.151
	75	0.281
	95	0.318
	115	0.392
	150	0.502
	177	0.565

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).

Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Enter project information in the TAN Boxes

						Point to Point Method			**End of Line Method**			**Load Centering Method**		
Project Name	COLT GHAA EXPANSION					**CIRCUIT IS WITHIN LIMITS**			**CIRCUIT IS WITHIN LIMITS**			**CIRCUIT IS WITHIN LIMITS**		
Date	4/9/2014													
Circuit Number	2					Totals		Voltage	Totals		Voltage	Totals		Voltage
Area Covered	2ND FLR NORTH					Current	Distance	Drop	Current	Distance	Drop	Current	Distance	Drop
Nominal System Voltage		19.6	EST2=19.8	BPS=19.1		1.525	384	**1.05**	1.525	384	**3.596**	1.525	384	**1.798**
Minimum Device Voltage		16	EST3=19.2	APS=19.6		End of Line Voltage		**18.55**	End of Line Voltage		**16.00**	End of Line Voltage		**17.80**
Total Circuit Current	1.525		Wire Gauge	Ohm's Per 1000		Percent Drop		5.34%	Percent Drop		18.34%	Percent Drop		9.17%
Distance from source to 1st device		140	14	3.07		End of Line and Load Centering Methods use only the wire guage for the first device to source								
Wire Gauge for balance of circuit			14	3.07		Standard Wire Resistance in Ohms per 1000 feet.								
						18=7.77 16=4.89 14=3.07 12=1.98 10=1.24								
						18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors								

Enter current in amps. .129 = 129 ma		Distance from		Voltage	
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
Device 1	0.130	0	19.60	0.000	0.00%
Device 2	0.239	20	19.43	0.171	0.87%
Device 3	0.130	22	19.27	0.327	1.67%
Device 4	0.239	36	19.05	0.554	2.83%
Device 5	0.096	18	18.96	0.641	3.27%
Device 6	0.130	24	18.86	0.743	3.79%
Device 7	0.130	50	18.68	0.915	4.67%
Device 8	0.239	36	18.58	1.016	5.18%
Device 9	0.096	16	18.57	1.035	5.28%
Device 10	0.096	20	18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
END			18.55	1.046	5.34%
Totals	1.525	384	End of Line Voltage		**18.55**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then the manufactures listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Genesis Horn Strobe and Speaker Strobe		
	Candela	Current @Rated Voltage
Genesis Horn Stobe at High dB 16 VDC	15	0.129
	1575	0.176
	30	0.167
	75	0.281
	110	0.337
Genesis Speaker Strobe at 16 VDC	15	0.096
	1575	0.106
	30	0.130
	75	0.239
	110	0.294

Genesis Strobe Only		
Model #	Candela	Current @Rated Voltage
Genesis Strobe at 16 VDC	15	0.103
	1575	0.152
	30	0.141
	75	0.255
	110	0.311
High Candela Model at 16 VDC Note: Ceiling model can be wall mounted	15	0.109
	30	0.151
	75	0.281
	95	0.318
	115	0.392
	150	0.502
	177	0.565

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APS10A BATT
CALC SHEET

JOB Colt Gateway, Greater Hartford Academy, East Armory, Building F Expansion

QTY	Description	STDBY MA EA	STDBY MA TOT	ALM MA EA	ALM MA TOT
	Circuit # 1				
1	Siga-AA30	1 mA	1 mA	1700 mA	1700 mA
0	Siga-AA50	1 mA	0 mA	3200 mA	0 mA
	OR				
0	Standby Current	0 mA	0 mA		
0	Alarm Current			0 mA	0 mA
	Circuit # 2				
0	Siga-AA30	1 mA	0 mA	1700 mA	0 mA
0	Siga-AA50	1 mA	0 mA	3200 mA	0 mA
	OR				
15	Standby Current	15 mA	15 mA		
100	Alarm Current			100 mA	100 mA
	Circuit # 3				
0	Siga-AA30	1 mA	0 mA	1700 mA	0 mA
0	Siga-AA50	1 mA	0 mA	3200 mA	0 mA
	OR				
79	Standby Current	79 mA	79 mA		
1089	Alarm Current			1089 mA	1089 mA
	Circuit # 4				
0	Siga-AA30	1 mA	0 mA	1700 mA	0 mA
0	Siga-AA50	1 mA	0 mA	3200 mA	0 mA
	OR				
79	Standby Current	79 mA	79 mA		
1525	Alarm Current			1525 mA	1525 mA
	200 mA Aux Out				
0	Current In mA Onl	0 mA	0 mA	0 mA	0 mA
	Sup Sub-Total		174 mA		
	Alarm Sub-Total				4414 mA
SUP REQ		mA	70 mA		190 mA
TOTALS		mA	0.244 mA		4.604

0	4 HOURS,5 MINUTES	0		0
0	4 HOURS,10 MINUTES	0		0
0	24 HOURS, 5 MINUTES	0		0
0	24 HOURS, 10MINUTES	0		0
1	24 HOURS, 15MINUTES	5.856		1.151
0	60 HOURS, 5 MINUTES	0		0
0	60 HOURS, 10 MINUTES	0		0
0	60 HOURS, 15 MINUTES	0		0
TOTAL BATTERY AMP HOURS REQUIRED				7.007

JOB Clot Gateway, Greater Hartford Academy, East Armory Building, Area F

QTY	CAT NUM	DESCR	STDBY MA	STDBY MA	ALM MA	ALM MA
			EA	TOT	EA	TOT
1	3-CPU/PPS	PANAL CPU/PWR SUPPLY	0.145	0.145	0.155	0.155
1	3-LCD	PANEL DISPLAY	0.053	0.053	0.053	0.053
0	3-RS485	NETWORK CARD	0.098	0	0.098	0
1	3-RS485A	NETWORK CARD	0.098	0.098	0.098	0.098
0	3-FIBMB2	FIBER OPTIC MOTHERBOARD	0.105	0	0.105	0
0	SMXLO	SINGLE MODE TRANCEIVER	0.079	0	0.079	0
0	SMXHI2	SINGLE MODE TRANCEIVER	0.079	0	0.079	0
0	MMXVR	MULTI MODE TRANSCEIVER	0.02	0	0.02	0
0	3-RS232	NETWORK CARD	0.058	0	0.058	0
0	3-NSHM1	NET SHORT HAUL MODEM	0.079	0	0.079	0
0	3-NSHM2	NET SHORT HAUL MODEM	0.105	0	0.105	0
0	3-XMEM	MEM XPANSION	0.011	0	0.011	0
0	3-BPS/BBC/M	BOOSTER PWR SUPPLY	0.053	0	0.053	0
0	3-ASU	AUDIO CONTROL	0.2	0	0.2	0
0	3-ASU/FT	AUDIO W/FIRE PHONE	0.112	0	0.112	0
0	3-ASUMX	AUDIO MEM XPAND	0.011	0	0.011	0
0	3-REMICA/P	REMOTE MICROPHONE	0.052	0	0.052	0
0	3-SSDC1	LOOP MOD WO 2W SMOKES	0.144	0	0.204	0
1	3-SDDC1	DUAL LOOP MOD WO 2W SMK	0.264	0.264	0.336	0.336
0	3-SSDC1	LOOP MOD W 2 WIRE SMOKES	0.144	0	0.204	0
0	3-SDDC1	DUAL LOOP MOD W 2W SMK	0.264	0	0.336	0
0	3-AADC	LOOP MOD (OLD STYLE)	0.175	0	0.31	0
0	3-IDC8/4	CONV ZONE CARD	0.048	0	0.408	0
0	3-MODCOMM	OFF PREMISIS MODULE	0.06	0	0.095	0
0	3-OPS	CITY TIE	0.053	0	0.147	0
0	3-LDSM	LRM SUPPORT MOD.	0.005	0	0.005	0
0	3-ZA15	15 WATT AMP	0.062	0	0.893	0
0	3-ZA20	20 WATT AMP	0.062	0	1.12	0
0	3-ZA30	30 WATT AMP	0.062	0	1.544	0
0	3-ZA40	40 WATT AMP	0.062	0	2.48	0
0	3-ZA90	90 WATT AMP	0.062	0	5.3	0
0	3-ZA95	95 WATT AMP	0.062	0	5.54	0
0	3-6/3SXXX	18 LEDs	0.029	0	0.029	0
0	3-12SXX	DISPLAY 12 LEDs	0.019	0	0.019	0
0	3-12XX	24 LEDs	0.038	0	0.038	0
0	3-24X	DISPLAY 24 LEDs	0.038	0	0.038	0
0	3-ANNCPU3	REMOTE ANNUNCIATOR	0.144	0	0.144	0
0	3-LCD	ANNUNCIATOR LCD DISPLAY	0.053	0	0.053	0
0	3-LCDANN	REMOTE LCD ANNUNCIATOR	0.04	0	0.042	0
0	3-6/3SXXX	18 LEDs	0.029	0	0.029	0
0	3-12SXX	DISPLAY 12 LEDs	0.02	0	0.02	0
0	3-12XX	24 LEDs	0.038	0	0.038	0
0	3-24X	DISPLAY 24 LEDs	0.038	0	0.038	0
0	3-SAC	SECURITY ACCESS / CONTROL	0.04	0	0.04	0
0	KPDISP	KEYPAD/DISPLAY	0.095	0	0.095	0
0	CRC / CRCXM	CARD READER CONTROLLER	0.06	0	0.06	0

0	CR-6005	CARD READER	0.035	0	0.035	0
0	CR-5365	CARD READER	0.05	0	0.05	0
0	CR-5395	CARD READER	0.05	0	0.05	0
0	CR-5355	CARD READER	0.09	0	0.09	0
0	24DC12	REGULATOR FOR 12V	0.7	0	0.7	0
0	SIGA-MD/S	PIR MOTION DETECTOR	0.0006	0	0.0007	0
0	READER POWER	REQUIRED		0		0
0	LOCK POWER	REQUIRED		0		0
0.1	Misc. Alarm Pwr.	REQUIRED				0.1
0.015	Misc Supv. Pwr.	POWER REQUIRED		0.015		0.015
		TOTALS	STANDBY	0.575	ALARM	0.757
		AMP HOURS REQUIRED				
0		4 HOURS,5 MINUTES		0		0
0		4 HOURS,10 MINUTES		0		0
0		4 HOURS, 15 MINUTES		0		0
0		24 HOURS, 5 MINUTES		0		0
0		24 HOURS, 10MINUTES		0		0
1		24 HOURS, 15 MINUTES		13.8		0.18925
0		60 HOURS, 5 MINUTES		0		0
0		60 HOURS, 10 MINUTES		0		0
0		60 HOURS, 15 MINUTES		0		0
TOTAL BATTERY AMP HOURS REQUIRED						13.98925

IF BATTERY SIZE IS EXCEEDED <65AH	BATT SIZE	
FROM 7A TO UNDER 14A THEN		
1-3-PPS/M + 1-3-BBC/M	6.994625	2 SETS
FROM 14A TO UNDER 21A THEN		
1-3-PPS/M + 2-3-BBC/M	4.6630833	3 SETS
FROM 21A TO 28A THEN		
1-3-PPS/M + 3-3-BBC/M	3.4973125	4 SETS